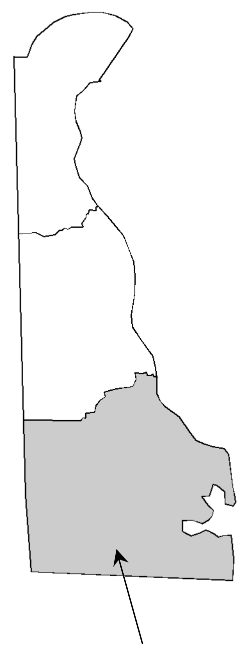
FLOOD INSURANCE STUDY

VOLUME 1 OF 3

SUSSEX COUNTY, DELAWARE
AND INCORPORATED AREAS

COMMUNITY	COMMUNITY NUMBER	COMMUNITY	COMMUNITY NUMBER
BETHANY BEACH, TOWN OF	105083	LAUREL, TOWN OF	100040
BETHEL, TOWN OF	100055	LEWES, CITY OF	100041
BLADES, TOWN OF	100031	MILFORD, CITY OF	100042
BRIDGEVILLE, TOWN OF	100032	MILLSBORO, TOWN OF	100043
DAGSBORO, TOWN OF	100033	MILLVILLE, TOWN OF	100044
DELMAR, TOWN OF*	100059	MILTON, TOWN OF	100045
DEWEY BEACH, TOWN OF	100056	OCEAN VIEW, TOWN OF	100046
ELLENDALE, TOWN OF*	100060	REHOBOTH BEACH, CITY OF	105086
FENWICK ISLAND, TOWN OF	105084	SEAFORD, CITY OF	100048
FRANKFORD, TOWN OF	100037	SELBYVILLE, TOWN OF	100038
GEORGETOWN, TOWN OF	100062	SLAUGHTER BEACH, TOWN OF	100050
GREENWOOD, TOWN OF	100039	SOUTH BETHANY, TOWN OF	100051
HENLOPEN ACRES, TOWN OF	100053	SUSSEX COUNTY (UNINCORPORATED AREAS)	100029

* No Special Flood Hazard Areas Identified



REVISED:

TBD

PRELIMINARY
FEB 15 2016

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
10005CV001C

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

ATTENTION: On Flood Insurance Rate Map (FIRM) panels 1005C0514K and 1005C0518K, the flood hazard information for the Atlantic Ocean within the Town of South Bethany has not been updated and continues to reflect information published in 2005. The unrevised area that continues to reflect the earlier analysis is identified on the aforementioned FIRM panels (with notes and bounding lines) and in the FIS report. The intent is to update the flood hazards in this area at a future date based on further review.

Until such time as the Federal Emergency Management Agency (FEMA) is able to initiate a new flood risk project, the flood hazard information on the aforementioned FIRM panels within the Town of South Bethany is being added as a snapshot of the previously effective information presented on the FIS and FIRMs dated January 6, 2005. As indicated above, it is expected that flood hazard data within the subject area could be significantly revised. This may result in floodplain boundary changes, 1-percent-annual-chance flood elevation changes, and/or changes to flood hazard zone designations.

The effective FIRM panels and FIS report will again be revised at a later date to update the flood hazard information within the Town of South Bethany when FEMA is able to complete a new flood risk project to represent coastal hazards for this area.

Initial Countywide FIS Effective Date: June 16, 1995

Revised Countywide FIS Effective Dates:

December 19, 1996 – to correct the elevation of Elevation Reference Mark 89

February 8, 1999	– to increase and add Base Flood Elevations; to change and delete Special Flood Hazard Areas; and to change floodway and zone designations
December 20, 2000	– to incorporate Letter of Map Revision
May 5, 2003	– to update corporate limits and county boundary; to change Special Flood Hazard Areas; and to add roads and road names
January 6, 2005	– to change Special Flood Hazard Areas and to update roads and road names
March 16, 2015	– to change Base Flood Elevations, Special Flood Hazard Areas, and zone designations; to incorporate previously issued Letters of Map Revision; to update the effects of wave action, corporate limits and roads and road names and; to reflect updated topographic information
TBD	– to update effective approximate flood hazard analysis; to add Base Flood Elevations; to change zone designation and Special Flood Hazard Areas; and to reflect updated topographic information.

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FLOOD INSURANCE STUDY

SUSSEX COUNTY, DELAWARE AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) revises and updates the previous FIS/Flood Insurance Rate Map (FIRM) for the geographic area of Sussex County, Delaware, including: the unincorporated areas of Sussex County; the Cities of Lewes, Milford, Rehoboth Beach, and Seaford; and the Towns of Bethany Beach, Bethel, Blades, Bridgeville, Dagsboro, Delmar, Dewey Beach, Ellendale, Fenwick Island, Frankford, Georgetown, Greenwood, Henlopen Acres, Laurel, Millsboro, Millville, Milton, Ocean View, Selbyville, Slaughter Beach, and South Bethany (hereinafter referred to collectively as Sussex County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Sussex County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the City of Milford is geographically located in Kent, and Sussex Counties. The City of Milford is included in its entirety in this FIS report.

Please note that on the effective date of this study, the Towns of Delmar and Ellendale have no mapped Special Flood Hazard Areas (SFHAs). This does not preclude future determinations of the SFHAs that might be necessitated by changed conditions affecting the community (ie. Annexation of new lands) or the availability of new scientific or technical data about flood hazards.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

Please note that the Federal Emergency Management Agency (FEMA) has not included any new flood hazard data for the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The June 16, 1995, initial countywide FIS, was prepared to include all jurisdictions within Sussex County into a countywide format FIS. Information on the authority and acknowledgments for each jurisdiction with a previously printed pre-countywide FIS report included in this countywide FIS is shown below.

Bethany Beach, Town of	The wave height analysis for the FIS effective August 2, 1982, and FIRM dated February 2, 1983, was prepared by Dewberry & Davis for the Federal Emergency Management Agency (FEMA).
Bethel, Town of	The hydrologic and hydraulic analyses for the FIS effective July 16, 1980, FIRM dated January 16, 1981, were prepared by Edward H. Richardson Associates, Inc., for FEMA, formerly the Federal Insurance Administration (FIA), under Contract No. H-4597. That work was completed in April 1979.
Blades, Town of	The hydrologic and hydraulic analyses for the FIS effective July 16, 1980, and FIRM dated January 16, 1981, were prepared by Kidde Consultants, Inc., for the FIA under Contract No. H-4745. That work was completed in August 1979.
Dagsboro, Town of	The hydrologic and hydraulic analyses for the FIS effective December 1, 1980, and FIRM dated June 1, 1981, were prepared by Kidde Consultants, Inc., for the FIA, under Contract No. H-4745. That work was completed in December 1979.
Dewey Beach, Town of	The wave height analysis for the FIS effective November 17, 1982, and FIRM dated April 4, 1983, was prepared by Dewberry & Davis, for FEMA, under Contract No. EMW-C-0543. That work was completed in May 1982.
Fenwick Island, Town of	The hydrologic and hydraulic analyses for the FIS effective March 23, 1973, were prepared by the U.S. Army Corps of Engineers (USACE) and the wave height analysis was prepared by Dewberry & Davis. The hydrologic and hydraulic analyses for the

	revised FIS dated April 17, 1985, were prepared by Dewberry & Davis for FEMA under Contract No. C-0968. That revised work was completed in July 1984.
Frankford, Town of	The hydrologic and hydraulic analyses for the FIS effective March 16, 1981, and FIRM dated September 16, 1981, were prepared by Kidde Consultants, Inc., for the FIA under Contract No. H-4745. That work was completed in January 1980.
Henlopen Acres, Town of	The hydrologic and hydraulic analyses for the FIS effective in February 1978, and FIRM dated February 2, 1983, were prepared by the Delaware River Basin Commission for the FIA under Contract No. H-3941. That work was completed in May 1977.
Laurel, Town of	The hydrologic and hydraulic analyses for the FIS effective July 16, 1980, and FIRM dated January 16, 1981, were prepared by Edward H. Richardson Associates, Inc., for the FIA under Contract No. H-4597. That work was completed in April 1979.
Lewes, City of	The wave height analysis for the FIS effective March 2, 1982, and FIRM dated September 2, 1982, was prepared by Dewberry & Davis for FEMA.
Milford, City of	The hydrologic and hydraulic analyses for the FIS effective December 1976, and FIRM dated June 1, 1977, was prepared by Greenhorne & O'Mara, Inc., for the FIA under Contract No. H-3689. That work was completed in May 1976.
Millsboro, Town of	The hydrologic and hydraulic analyses for the FIS effective March 1978, and FIRM dated September 1, 1978, were prepared by the Delaware River Basin Commission for the FIA under Contract No. H-3941. That work was completed in June 1977.
Milton, Town of	The hydrologic and hydraulic analyses for the FIS effective in February 1978, and FIRM dated August 1, 1978, were prepared by the Delaware River Basin Commission for the FIA under Contract No. H-3941. That work was completed in May 1977.

Ocean View, Town of	The hydrologic and hydraulic analyses for the FIS effective in March 1980, and FIRM dated September 3, 1980, were prepared by the USACE, Philadelphia District, for the FIA under Inter-Agency Agreement No. IAA-H-10-77. That work was completed in December 1978.
Rehoboth Beach, City of	The wave height analysis for the FIS effective August 2, 1982, was prepared by Dewberry & Davis for FEMA.
Seaford, City of	The hydrologic and hydraulic analyses for the FIS effective in August 1978, and FIRM dated February 1, 1979, were prepared by the Delaware River Basin Commission for the FIA under Contract No. H-3941. That work was completed in September 1977.
Slaughter Beach, Town of	The wave height analysis for the FIS effective March 2, 1982, and FIRM dated April 2, 1992, was prepared by Dewberry & Davis for FEMA.
South Bethany, Town of	The hydrologic and hydraulic analyses for the original FIS effective in August 1975 were prepared by the USACE, Baltimore District, under Inter-Agency Agreement No. H-2-73, Project Order No. 13. That work was completed in July 1975. The wave height analysis was prepared by Dewberry & Davis and completed in February 1982. For the FIS dated April 3, 1985, the updated versions were prepared by Dewberry & Davis for FEMA under Contract No. C-0968. That work was completed in July 1984.
Sussex County (Unincorporated Areas)	The wave height analysis for the FIS effective July 5, 1983, was prepared by Dewberry & Davis for FEMA, under Contract No. EMW-C-0543. That work was completed in May 1982.

There are no previous FISs for the Towns of Bridgeville, Georgetown, Greenwood, Millville, and Selbyville; therefore, the previous authority and acknowledgment information for these communities is not included in this FIS.

For the June 16, 1995, initial countywide FIS, the updated hydrologic and/or hydraulic analyses performed for the revised flooding sources were prepared by the USACE, Philadelphia District, for FEMA, under Inter-Agency Agreement No. EMW-91-3525. That work was completed in January 1993.

For the February 8, 1999, countywide FIS, the hydrologic and hydraulic analyses for the Mispillion River were prepared by the USACE, Philadelphia District, for FEMA, under Inter-Agency Agreement No. EMW-93-E-4119, Task Letter No. 93.7. That work was completed in April 1995. Hydrologic and hydraulic analyses for Shoals Branch were prepared by the USACE, under Inter-Agency Agreement No. EMW-95-E-4759, Task Letter No. 95-10. That work was completed in October 1996.

For the December 20, 2000, May 5, 2003, and January 6, 2005, countywide FIS revisions, refer to the Notice to Flood Insurance Study Users page at the beginning of this FIS report.

For the March 16, 2015, countywide FIS revision, the riverine flood hazard analyses, the Digital Flood Insurance Rate Map (DFIRM) database, and mapping were prepared for FEMA by GG3, a joint venture between Greenhorne & O'Mara, Inc., and Gannett Fleming, Inc., under the Joint Venture Contract No. EMP-2003-CO-2606, Task Order Number 11. The countywide FIS does not include new detailed hydrologic and hydraulic analyses, but rather approximately 65 stream miles studied by limited detailed methods. The limited detailed hydrologic and hydraulic analyses were completed by URS Corporation in December 2009.

Additionally, for the March 16, 2015, countywide FIS revision, the coastal flood hazard analyses were completed for FEMA by the USACE and its project partners under Project HSFE03-06-X-0023 and Project HSFE03-09-X-1108, and by Risk Assessment, Mapping, and Planning Partners (RAMPP) under contract No. HSFEHQ-09-D-0369, Task Order HSFE03-09-J-0002. The creation of the final FIRM database and coastal floodplain mapping for this revision were performed by RAMPP under contract No. HSFEHQ-09-D-0369, Task Order HSFE03-09-J-0002. This study was completed in December 2012.

The riverine hydrologic and hydraulic analyses for this revision were performed by AECOM, for the Delaware Department of Natural Resources and Environmental Control (DNREC), under Purchase Order No. STATE-0000206219.

For the January 6, 2005, countywide FIS revision, base map transportation features shown on the FIRM were provided in digital format by the Delaware Department of Transportation. This information was compiled at a scale of 1:12,000 from aerial photography dated 1992. Base map drainage was provided in Digital Line Graph (DLG) format by U.S. Geological Survey (USGS). This information was compiled at a scale of 1:24,000 from aerial photography dated 1992. Political boundaries shown were provided in digital format by the Delaware Office of State Planning Coordination. This information was dated 2002.

For the March 16, 2015, countywide FIS revision, base map information shown on this FIRM was provided in digital format by Delaware Geospatial Data Exchange. The base map features were compiled at a scale of 1:24,000 from aerial photography dated 2011.

The projection used in the preparation of this map was State Plane Delaware zone (FIPS Zone 0700). The horizontal datum was North American Datum of 1983 (NAD 83), Geodetic Reference System 1980 (GRS 80) spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of information shown on this FIRM.

1.3 Coordination

An initial Consultation Coordination Officer’s (CCO) meeting is typically held with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with the same representatives to review the results of the study.

For the June 16, 1995, initial countywide FIS, an initial CCO meeting was held on October 17, 1989, and a final CCO meeting was held on October 13, 1993. Both of these meetings were attended by representatives of FEMA; the USACE; the City of Lewes and Rehoboth Beach; the Towns of Bethany Beach, Fenwick Island, Henlopen Acres, Laurel, Millsboro, Ocean View, Slaughter Beach, and South Bethany; and the unincorporated areas of Sussex County.

For the February 8, 1999, countywide FIS revision, the county was notified by FEMA in a letter dated December 4, 1996, that its FIS would be revised using the analyses prepared by the USACE.

For March 16, 2015, countywide FIS revision, the initial CCO meeting was held on December 1, 2010 at the Sussex County West Annex and attended by representatives of FEMA, Sussex County, local communities, Delaware Department of Natural Resources (DNREC), and FEMA study contractors.

For the March 16, 2015, countywide FIS revision, a community meeting to discuss the riverine analyses was held on March 30, 2011, and attended by representatives of FEMA Region III, the Sussex County Planning and Zoning Department, DNREC, local community representatives and FEMA study contractors. All problems raised at that meeting have been addressed.

For the March 16, 2015, countywide FIS revision, the final CCO meeting was held on June 19, 2013, and attended by representatives of FEMA, Sussex County, local communities, DNREC, and FEMA study contractors.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Sussex County, Delaware, including the incorporated communities listed in Section 1.1.

All or portions of the flooding sources listed in Table 1, "Flooding Sources Studied by Detailed Methods," were streams previously studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

TABLE 1 – FLOODING SOURCES STUDIED BY DETAILED METHODS

Bark Pond	Georgetown Road	Mirey Branch	Rossakatum
Betts Pond	Branch	Mispillion River	Branch
Bridgeville Branch	Herring Creek	Mullet Run	Round Pole Branch
Broad Creek	Herring Run	Nanticoke River	Sandy Branch
Broadkill River	Hopkins Prong	Pemberton Branch	Shoals Branch
Buntings Branch	Indian River	Pepper Creek	Sowbridge Branch
Cart Branch	Ingram Branch	Pepper Creek	Tantrough Branch
Cedar Creek	Iron Branch	Fork 1	Unity Branch
Chapel Branch	Layton-Vaughn	Pepper Creek	Vines Creek
Church Branch	Ditch	Fork 2	Whartons Branch
Clear Brook	Little Creek	Pepper Creek	White Creek
Deep Branch	Love Creek	Fork 3	White Creek Ditch
Deep Creek	Martin Branch	Presbyterian Branch	

For the June 16, 1995 countywide FIS report, the Atlantic Ocean, including all or portions of Delaware Bay, Indian River Bay, Little Assawoman Bay, and Rehoboth Bay, were restudied by detailed methods. All streams except Deep Branch, Mispillion River, and Mullet Run were restudied. The June 16, 1995, countywide FIS also incorporated the effects of annexations or DE annexations by the following communities: the City of Seaford and the Towns of Georgetown, Millsboro, and Ocean View.

For the February 8, 1999, countywide FIS revision, the Mispillion River was restudied by detailed methods from Washington Street to U.S. Route 113, a total of 1.2 miles, the downstream end being tidal, the upstream end at the confluence of Tantrough Branch; and Shoals Branch was studied by detailed methods from U.S. Route 113 to County Road 432, a distance of 4.3 miles. The downstream end of the study ties into Betts Pond.

For the January 6, 2005, countywide FIS revision, all elevations were converted from National Geodetic Vertical Datum of 1929 (NGVD 29) to North American Vertical Datum of 1988 (NAVD 88). In addition, an updated base map was used for the FIRM.

For March 16, 2015, countywide FIS revision, approximately 65 stream miles were studied by limited detail methods with 49 hydraulic structure crossings. In addition, flood data tables that include the river station, discharge and 1-percent annual chance water surface elevation (WSEL) for each cross section included in the this flood study update have been developed.

For this countywide FIS revision, approximately 120 stream miles were studied by limited detailed methods with 161 structure crossings.

Table 2, "Flooding Sources Studied by Limited Detailed Methods" lists the streams that were studied by limited detailed methods during For the March 16, 2015 revision and this countywide FIS revision.

TABLE 2 – FLOODING SOURCES STUDIED BY LIMITED DETAILED METHODS

Stream Name	**Limits of Study**
Ake Ditch[2]	From the confluence with Nanticoke River to approximately 1.0 mile upstream of the confluence with Nanticoke River
Alms House Ditch[2]	From the confluence with Horse Pound Swamp Ditch to approximately 0.3 mile upstream of Shortly Road
Asketum Branch[2]	From the confluence with Stoney Branch to approximately 0.5 mile upstream of James Road
Atlanta Devonshire Branch[2]	From the confluence with Herring Run to approximately 0.4 mile upstream of the confluence with Herring Run
Baker Mill Branch[2]	From the confluence with Deep Creek to the confluence with Black Savannah Branch and Black Savannah Branch Prong 1
Black Savannah Branch[2]	From the confluence with Black Savannah Branch Prong 1 to approximately 0.7 mile upstream of Delaware State Highway 20
Black Savannah Branch Prong 1[2]	From the confluence with Black Savannah Branch to approximately 0.2 mile upstream of Fleetwood Pond Road
Broad Creek[2]	From approximately 0.5 mile upstream of the confluence with Georgetown Road Branch to the confluence with James Branch
Broad Creek Prong 1[2]	From the confluence with Broad Creek to approximately 0.2 mile upstream of Woodland Ferry Road
Bucks Branch[2]	From the confluence with Clear Brook Branch to approximately 740 feet upstream of Baker Road
Bucks Branch Prong 2[2]	From the confluence with Bucks Branch to approximately 950 feet upstream of Wesley Church Road
Bucks Branch Prong 5[2]	From the confluence with Bucks Branch to approximately 0.8 mile upstream of Wesley Church Road

TABLE 2 – FLOODING SOURCES STUDIED BY LIMITED DETAILED METHODS – (continued)

Stream Name	Limits of Study
Butler Mill Branch[1]	Approximately 500 feet (ft.) downstream of Woodland Road to the confluence with Horsemen Branch
Chapel Branch[1]	Approximately 0.16 mile downstream of Woodland Road to approximately 0.67 miles upstream of Boyce Road
Clear Brook Branch[2]	From approximately 0.3 mile upstream of Sussex County Road 46 to approximately 0.3 mile upstream of Wesley Church Road
Cool Branch[2]	From the confluence with Tubbs Branch to approximately 0.9 mile upstream of Bunny Lane
Copper Branch[2]	From the confluence with Rossakatum Branch to approximately 0.3 mile upstream of U.S. Highway 13
Cow Bridge Branch[2]	From the confluence with Indian River to the confluence with Peterkins Branch and Deep Branch
Deep Branch[2]	From the confluence with Peterkins Branch to the confluence with Simpler Branch and White Oak Swamp Ditch
Deep Creek[2]	From approximately 0.7 mile upstream of the confluence with Tubbs Branch to approximately 910 feet upstream of Hunting Club Road
Eli Walls Branch[2]	From the confluence with Cow Bridge Branch to approximately 0.6 miles upstream of the confluence with McGee Ditch
Georgetown Vaughn Ditch[2]	From the confluence with Mifflin Ditch to approximately 0.2 mile upstream of Delaware State Highway 18
Gills Branch[2]	From the confluence with Eli Walls Branch to approximately 0.8 mile upstream of Cedar Lane
Graham Branch[2]	From the confluence with Cool Branch to approximately 0.6 mile upstream of the confluence with Cool Branch
Gravelly Branch[1]	At the confluence with Nanticoke River to approximately 0.06 miles upstream of Deer Forest Road
Gum Branch[1]	At the confluence with Nanticoke River to approximately 1.22 miles upstream of Wolf Road
Herring Run[2]	From approximately 1.1 miles upstream of Alternate U.S. Route 13 to approximately 600 feet upstream of Ross Station Road
Herring Run Prong 1[2]	From the confluence with Herring Run to approximately 0.3 mile upstream of the confluence with Herring Run
Hitch Pond Branch[1]	At the confluence with James Branch to approximately 0.24 miles upstream of Wooten Road

TABLE 2 – FLOODING SOURCES STUDIED BY LIMITED DETAILED METHODS – (continued)

Stream Name	Limits of Study
Holly Branch[2]	From the confluence with Little Creek to approximately 0.8 mile upstream of U.S. Highway 13
Horse Pound Swamp Ditch[2]	From the confluence with Alms House Ditch to approximately 830 feet upstream of Kruger Road
Hurley Drain[2]	From the confluence with Nanticoke River to approximately 740 feet upstream of Concord Pond Road
Iron Branch[1]	Approximately 450 ft. downstream of Handy Road to approximately 0.3 miles upstream of Hickory Hill Road
James Branch[1]	Approximately 0.36 mile downstream of Laurel Road to approximately 0.51 miles upstream of Whitesville Road
Jobs Branch[2]	From the confluence with Stoney Branch to approximately 0.8 mile upstream of East Trap Pond Road
Layton Vaughn Ditch[2]	From the confluence with McColleys Branch to approximately 0.6 mile upstream of Vaughn Road
Little Creek[2]	From approximately 1.2 miles upstream of Sussex County Road 492 to the confluence with Holly Branch and Meadow Branch
Marshy Hope Creek[1]	Approximately 0.87 mile downstream of Noble Road to approximately 0.16 miles upstream of Hickman Road
McColleys Branch[2]	From the confluence with Deep Creek to the confluence with New Ditch and Raccoon Ditch
McGee Ditch[2]	From the confluence with Eli Walls Branch to approximately 0.6 mile upstream of East Wood Branch Road
Meadow Branch[2]	From the confluence with Little Creek to approximately 720 feet upstream of Saint George Road
Meadow Branch Prong 5[2]	From the confluence with Meadow Branch to approximately 520 feet upstream of Bi State Boulevard
Meadow Branch Prong 5 Tributary 1[2]	From the confluence with Meadow Branch Prong 5 to approximately 320 feet upstream of Farm Road
Mifflin Ditch[2]	From the confluence with Deep Creek to approximately 1.8 miles upstream of US Highway 113
Mifflin Ditch Prong 2[2]	From the confluence with Mifflin Ditch to approximately 0.2 mile upstream of Piglet Path
Mirey Branch[2]	From approximately 0.5 mile upstream of Sussex County Road 326 to approximately 0.2 mile upstream of Governor Stockley Road

TABLE 2 – FLOODING SOURCES STUDIED BY LIMITED DETAILED METHODS – (continued)

Stream Name	Limits of Study
Nanticoke River[1]	Approximately 0.84 mile downstream of Old Furnace Road to approximately 0.8 miles upstream of Green Hurst Farm Road
Narrow Ditch[2]	From the confluence with Mirey Branch to approximately 0.5 mile upstream of the confluence with Mirey Branch
New Ditch[2]	From the confluence with Raccoon Ditch to approximately 0.3 mile upstream of Asbury Road
New Ditch Prong 2[2]	From the confluence with New Ditch to approximately 0.8 mile upstream of Asbury Road
Peterkins Branch[2]	From the confluence with Deep Branch to approximately 660 feet upstream of Cedar Creek Avenue
Priestly Branch[2]	From the confluence with Nanticoke River to approximately 0.2 mile upstream of Delaware State Highway 18
Quarter Branch[2]	From the Kent\Sussex County boundary to approximately 0.3 mile upstream of Nine Foot Road
Raccoon Ditch[2]	From the confluence with New Ditch to approximately 0.4 mile upstream of Raccoon Ditch Road
Rogers Branch[2]	From the confluence with Broad Creek to approximately 790 feet upstream of Chipmans Pond Road
Rossakatum Branch[2]	From approximately 0.7 mile upstream of Sussex County Road 69 to approximately 0.3 mile upstream of Nero Lane
Rum Bridge Branch[2]	From the confluence with Deep Creek to approximately 70 feet downstream of the confluence of Rum Bridge Branch Prong 1
Rum Bridge Branch Prong 1[2]	From the confluence with Rum Bridge Branch to 0.8 mile upstream of the confluence with Rum Bridge Branch
Sheep Pen Branch[2]	From approximately 100 feet upstream of Sussex County Road 330 to approximately 0.6 mile upstream of Salt Lane
Shorts Branch[2]	From the confluence with Deep Creek to approximately 0.5 mile upstream of Cokesbury Road
Simpler Branch[2]	From the confluence with White Oak Swamp Ditch to Sockorockets Ditch and Simpler Branch Prong 1
Simpler Branch Prong 1[2]	From the confluence with Sockorockets Ditch to approximately 0.3 mile upstream of Ohnmacht Lane
Smith-Short and Willin Ditch[1]	At the confluence with Gravelly Branch to approximately 0.05 miles upstream of Russell Road

TABLE 2 – FLOODING SOURCES STUDIED BY LIMITED DETAILED METHODS – (continued)

Stream Name	**Limits of Study**
Sockorockets Ditch[2]	From the confluence with Simpler Branch Prong 1 to approximately 0.9 mile upstream of Delaware State Highway 30
Stockley Branch[2]	From the confluence with Cow Bridge Branch to the confluence with Alms House Ditch and Horse Pound Swamp Ditch
Stoney Branch[2]	From the confluence with Asketum Branch to approximately 1.4 miles upstream of Tyndall Road
Thompson Branch[1]	At the confluence with Hitch Pond Branch to approximately 0.07 miles upstream of Whaley's Road
Toms Dam Branch[1]	At the confluence with Gum Branch to approximately 0.31 miles upstream of Beach Highway
Tubbs Branch[2]	From the confluence with Deep Creek to the confluence with Cool Branch and Graham Branch
Turkey Branch[2]	From the confluence with Nanticoke River to approximately 0.6 mile upstream of Rifle Range Road
Tyndall Branch[2]	From the confluence with Deep Creek to the confluence with Asketum Branch
Unnamed Tributary of White Marsh Branch[1]	At the confluence with White Marsh Branch to approximately 0.52 miles upstream of DuPont Parkway
Ward Cordrey Branch[2]	From the confluence with Holly Branch to approximately 0.7 mile upstream of Snake Road
White Marsh Branch[1]	At the confluence with Nanticoke River to approximately 0.55 miles upstream of Woodard Road
White Oak Swamp Ditch[2]	From the confluence with Simpler Branch approximately 0.3 mile upstream of the confluence with Simpler Branch
William H Newton Ditch[2]	From the confluence with Clear Brook to approximately 0.5 mile upstream of Old Furnace Road

[1]March 16, 2015 revision
[2]This countywide revision

The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction.

Numerous flooding sources were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flooding hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and the communities.

The March 16, 2015, countywide FIS revision, also included new coastal analysis and mapping for 102 miles of shoreline.

Table 3 presents the Letters of Map Change (LOMCs) incorporated into the March 16, 2015 revision:

TABLE 3 – INCORPORATED LETTERS OF MAP CHANGE (LOMCs)

LOMC	Case Number	Effective Date	Project Identifier
LOMR	05-03-0189P	August 25, 2005	Iron Branch
LOMR	05-03-0353P	April 05, 2006	Pepper Creek Fork 3
LOMR	05-03-A587P	March 07, 2007	Indigo Run
LOMR	08-03-0159P	May 21, 2008	Cool Spring: McCone Project No. D5050011
LOMR	09-03-1704P	October 13, 2009	Round Pole Branch Revision
LOMR	10-03-0270P	October 21, 2010	Hastings Heritage Subdivision

2.2 Community Description

Sussex County is the most southern of the three counties in Delaware. The county is bordered by Kent County to the north, and the Maryland counties of Caroline and Dorchester to the west, Wicomico to the southwest, and Worcester to the south. The coastal communities are bordered on the east by the Atlantic Ocean.

The temperature range in Sussex County is moderate, varying from an average low of 27 degrees Fahrenheit (^{o}F) in February to an average high of 89^{o}F in July. The average annual rainfall is 46 inches.

The county is situated on the geological subdivision known as the Atlantic Coastal Plain Province, which provides excellent soil conditions for agriculture and vegetal growth. Consequently, although there are some urbanized communities, outlying areas remain farmland, natural forests, and wetlands.

2.3 Principal Flood Problems

Tropical storms or hurricanes are most likely to occur from August through October, followed by northeasters (storms characterized by strong northeasterly winds) through early spring. Flooding within Sussex County on fluvial flood sources occurs during all seasons of the year with the main flood seasons being spring and summer. Summer floods are generally the result of intense local thunderstorms.

Along the Delaware Bay and Atlantic Ocean coasts, as well as along inland bay coastlines, flooding is caused by high tides and wave action associated with northeasters or other coastal storms.

Notable hurricanes and tropical storms impacting the state of Delaware and Sussex County are noted in the following tabulation. These storms brought heavy rains and flooding. Please note, storms that did not bring heavy rains, such as Hurricane Ophelia (September 16, 2005) are not included in this tabulation.

Storm Name	Date	Issues/Impacts
Hurricane Sandy	October 29-30, 2012	Widespread flooding, Delaware Route 1 closed due to flooding
Hurricane Isaac (remnants)	September 1-4, 2012	Heavy rain
Tropical Storm Lee (remnants)	September 7-10, 2011	Heavy rain, strong winds
Hurricane Irene	August 27-28, 2011	Rainfall peaked at 10.43 inches in Ellendale, tornado in Lewes
Tropical Storm Hanna	September 6, 2008	Heavy rains, strong winds, minor tidal flooding Delaware Bay
Hurricane Wilma	October 24, 2005	Heavy surf, high tides, beach erosion
Tropical Storm Tammy	October 7, 2005	Heavy rains and flooding
Hurricane Cindy (extratropical remnants)	July 8, 2005	Heavy rains and wind damage
Hurricane Jeanne	September 28, 2004	Heavy rains, north portion of state harder hit
Hurricane Ivan	September 18, 2004	Heavy rain, creek flooding and drainage problems
Hurricane Gaston	August 30, 2004	Moderate rain, minor stream and drainage flooding
Hurricane Alex	August 3, 2004	Heavy surf injured three in Rehoboth Beach
Hurricane Isabel	September 17, 2003	Strong waves, 5 foot storm surge along Delaware coast, damaging winds
Tropical Storm Henri	September 15, 2003	Heavy rains resulted in widespread flooding and damage
Tropical Storm Allison (subtropical remnant)	June 16, 2001	Rainfall peaked at 4.2 inches in Greenwood, drainage issues, however minor damages reported
Hurricane Gordon (remnants)	September 19, 2000	Heavy rains over several hours let to flooding with minimal damage

Storm Name	Date	Issues/Impacts
Hurricane Irene	October 17, 1999	Flooding, however damage minor
Tropical Storm Floyd	September 16, 1999	Rainfall peaked at 10.58 inches in Greenwood setting 24-hour state record, flooding exceed 1-percent annual chance flood
Tropical Storm Josephine (remnants)	October 8, 1996	High tides, peaked at 7.6 ft at Lewes, flooding oceanfront homes and portion of Delaware Route 1
Tropical Storm Bertha	July 13, 1996	Moderate rainfall caused drainage problems and minor tidal flooding near Fenwick Island
Hurricane Felix	August 13-21, 1995	Beach erosion and minor tidal flooding
Hurricane Gloria	September 27, 1985	High waves eroded beaches, wrecked dunes, damaged oceanfront property, flooding closed several highways, including Delaware Route 1 - heaviest damage in Delaware occurred in Sussex County

The hurricanes of August 1933 and September 1944, and the northeasters of November 1950, November 1953, January 1956, and March 1962 affected the Delaware coastline, including Sussex County. Beach erosion and damage to shore structures also occurred in coastal communities during such storms. The 1944 hurricane produced severe damage along the oceanfront of coastal communities as a result of wind and waves. The northeasters of 1950, 1953, and 1956 produced strong winds and high tides, which eroded the oceanfront and damaged highways and residences along the Delaware coastline. The storm of 1962 was unusually severe, with strong northeast winds lasting through five successive high tides. The high tides, combined with wind-driven waves, produced record high tide readings along the beach and inland bay areas, resulting in severe damage. Flooding problems occasionally result from overtopping of the Willow Street bridge over Broad Creek and on Rossakatum Branch in the Town of Laurel.

The Broadkill River overflowed its banks and caused flood damage in Milton in March of 1962 as a result of water being pushed up the river by tidal surges resulting from a northeaster.

The Mispillion River in the City of Milford overflowed its banks in 1935 and in 1962 as a result of high tides caused by a northeaster.

Historical data exists for various storms along the Delaware coast. The October/November 1991 storm (Halloween Storm) and January 1992 storm had peak recorded elevations of 5.3 and 6.6 feet NAVD88, respectively, at the NOAA tide gage at Lewes, which would place the return period of the Halloween Storm at less than 10 years and the January storm at approximately 25 years. Other events of record include the following storms with their peak elevation in feet NAVD88 as recorded at the NOAA tide gage at Lewes unless otherwise noted: the Great Atlantic Hurricane of September 1944, 7+ feet estimated; the November 1950 storm, 6.4 feet estimated; the March 1962 storm, 7.3 feet; and Hurricane Gloria of September 1985, 5.8 feet.

2.4 Flood Protection Measures

Flood protection measures in the City of Milford are limited to bank stabilization measures along the Mispillion River and the flood-reducing effects of Haven Lake, Silver Lake, and Marshall Millpond. These impoundments are more effective in reducing the hazards of high frequency floods (10- and 2-percent-annual-chance frequency) than in controlling low frequency events (1- and 0.2-percent-annual-chance floods). Bank stabilization measures include river channelization by concrete (with the exception of the river bed) and some channel realignment.

Presently, there are no other flood protection measures within Sussex County. Residents depend on the usual warnings issued through radio, television, and local newspapers for information concerning possible flood conditions. Many dams exist in Sussex County, but they are used for purposes other than flood control.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 2-, 1-, and 0.2-percent chance floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 1-percent-annual-chance flood (100-year of annual exceedence) in any 50-year period is approximately 40-percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60-percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

Please note that FEMA has not included any new flood hazard data within the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and peak elevation-frequency relationships for each flooding source studied in detail affecting the county.

Information on the methods used to determine peak discharge-frequency relationships for the streams studied by detailed methods is shown below.

A gaging station on Beaverdam Creek (a small upstream tributary of the Mispillion River outside the City of Milford corporate limits) was the only source of streamflow data available for the Mispillion River, Mullet Run, and Deep Branch. This lack of data dictated use of hydrologic methods other than the standard log-Pearson Type III distribution techniques of annual peak flow data (Water Resources Council (WRC), 1967). To define discharge-frequency data for the Deep Branch, Mispillion River, and Mullet Run several methods of analysis were used. A method using a rainfall-runoff computer model that relates rainfall, land-use, drainage area, and other hydrologic watershed characteristics (i.e., infiltration, antecedent soil moisture conditions, time of concentration) was the principal method used (Soil Conservation Service, 1965). Other methods used for comparison of results include: the application of regional relationships as developed for Kent County, Delaware by the study contractor from a previous county study (FEMA, 1975); regional relationships (regression equations) relating peak discharge with drainage area, a runoff coefficient, an average basin slope as developed in a previous study (Delaware Department of Highways and Transportation, 1972); and, a regional log-Pearson Type III study, which included all available streamflow records for Kent County and additional data generated by a synthetic streamflow computer model (USACE, 1972). Final results of the hydrologic analyses were compared with the frequency and discharge data of historical floods as remembered by community officials and local residents.

For the June 16, 1995, initial countywide FIS, peak discharges for the remaining streams studied by detailed methods were determined using R. H. Simmons and D. H. Carpenter's regional method (USGS, 1978).

The Simmons and Carpenter method was developed specifically for Delaware for use on gaged and ungaged streams. This method provides a separate set of regression equations for the southern part of the state taking into account such factors as the mild slope of the streams, the soil type, and storage associated with Sussex County's numerous swamps and dams.

The regression equations in the Simmons and Carpenter method are based on gage data through 1975 providing frequency streamflow estimates up to the 1-percent-annual-chance frequency event. The 0.2-percent-annual-chance frequency event was extrapolated on a plot of the 50-, 20-, 10-, 4-, 2-, and 1-percent-annual-chance frequency events for each stream.

To determine whether the Simmons and Carpenter regression equations should be updated for data collected after 1975, a comparative analysis was performed on a long term gage on the Nanticoke River USGS (gage no. 01487000). All results are in close agreement indicating that the regression equations are still valid today.

Before undertaking the regression analysis, WRC Bulletin 17B methodology was used at all gage locations to update discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance frequency events using the most recent data available (WRC, 1981). The Simmons and Carpenter regression analysis was then performed for all streams. The regression equations were used directly for ungaged streams and for sites on gaged streams where the drainage area at the site in question was less than 50-percent or greater than 150-percent of the drainage area at the gage. The regression equations were used with an adjustment for sites on gaged streams where the drainage area at the site in question was between 50-percent and 150-percent of the drainage area at the gage. The adjustment modifies streamflow estimates through an equation based on the gage discharge and a drainage area proportion. This occurred at only two sites on gaged streams in Sussex County, one on Sowbridge Branch and one on Pepper Creek. All of the Simmons and Carpenter regression equations take into consideration physical basin characteristics.

Where applicable, all regression results were checked for consistency with updated frequency discharges at long-term gage locations.

For the March 16, 2015, countywide FIS revision, hydrologic analyses for the riverine sources studied by limited detail methods was completed as a part of the "Hydrologic Analysis of Williams Pond Watershed Sussex County, Delaware: In Support of the Nanticoke Watershed Management Plan" for DNREC (URS Corporation, Inc., 2010).

For this revision, the peak flows for Limited Detailed Study streams were developed using U.S. Geological Survey Scientific Investigations Report 2006-5146, "Magnitude and Frequency of Floods on Nontidal Streams in Delaware." All the studied streams are located in the Atlantic Coastal Plain region. Soils data was obtained from the Web Soil Survey by the Natural Resources Conservation Service of the US Department of Agriculture.

A summary of the drainage area-peak discharge relationships for all of the streams studied by detailed methods is shown in Table 4A, "Summary of Discharges for Detailed Study Streams." Discharges are shown in cubic feet per second (cfs).

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS

		PEAK DISCHARGES (cfs)			
FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
BARK POND					
Upstream of confluence with Millsboro Pond	7.7	100	170	210	330
BETTS POND					
Upstream of confluence with Millsboro Pond	18.4	170	290	360	540
SHOALS BRANCH					
Upstream of U.S. Route 113	17.7	173	285	350	510
At the confluence of Long Drain Ditch and Phillips Ditch	6.8	73	110	129	195
BRIDGEVILLE BRANCH					
Upstream of U.S. Route 13	7.8	270	550	720	1,300
BROAD CREEK					
Upstream of downstream Bethel corporate limits	116.1	1,700	3,100	3,900	6,000
Upstream of confluence with Little Creek	80.0	1,100	2,100	2,700	4,200

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
BROADKILL RIVER					
Approximately 5,000 feet downstream of Town of Milton downstream corporate limits	45.4	576	991	1,213	1,900
CART BRANCH					
Upstream of confluence with Nanticoke River	4.3	410	825	1,090	2,200
CEDAR CREEK					
Upstream of State Route 30 (Swiggets Pond Dam)	22.2	320	550	670	1,000
Upstream of County Road 214 (Cubbage Pond Dam)	10.3	150	250	300	450
Upstream of Hudson Pond Dam	5.8	80	140	160	250
Upstream of U.S. Route 113	1.5	20	30	40	60
CHAPEL BRANCH					
Approximately 3,800 feet upstream of Burton Pond Dam	5.9	70	120	140	225
Upstream of confluence with Wall Branch	4.2	*	*	200	*
* Data Not Available					
CHURCH BRANCH					
Upstream of confluence with Swiggets Pond	6.6	170	320	400	700
Upstream of unnamed tributary confluence approximately 2,900 feet upstream of County Road 214	3.1	80	150	180	300
Upstream of unnamed tributary confluence approximately 200feet upstream of County Road 226	0.5	10	20	30	50

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
CLEAR BROOK					
Upstream of confluence with Nanticoke River	22.5	400	750	950	1,500
Upstream of Hearns Pond Dam	13.0	230	420	530	800
DEEP CREEK					
Upstream of confluence with Nanticoke River	62.9	630	1,100	1,350	2,100
GEORGETOWN ROAD BRANCH					
Upstream of confluence with Records Pond	0.25	15	30	40	70
HERRING CREEK					
Upstream of Hazard Cove	21.1	250	440	540	950
Upstream of confluence with Hopkins Prong	10.9	130	220	270	450
HERRING RUN					
Upstream of confluence with Williams Pond	5.21	350	760	1,020	1,770
HOPKINS PRONG (UNITY BRANCH)					
Upstream of confluence with Herring Creek	8.8	140	240	290	500
Upstream of State Route 24	7.5	120	200	250	400
INDIAN RIVER					
Upstream of confluence with Warwick Gut	102.0	2,190	4,220	5,360	8,400
Upstream of Millsboro Pond Dam	63.0	1,340	2,540	3,220	5,200
INGRAM BRANCH					
Upstream of confluence with Wagamons Pond	14.1	200	345	420	620

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
IRON BRANCH					
Upstream of confluence with Whartons Branch	7.9	360	720	940	1,550
LAYTON-VAUGHN DITCH					
Approximately 2,000 feet upstream of confluence with New Ditch	3.5	260	450	546	826
LITTLE CREEK					
Upstream of confluence with Broad Creek	17.4	530	1,000	1,300	2,200
Upstream of State Route 24	15.6	260	470	580	900
Approximately 2,000 feet downstream of County Road 277	11.2	190	330	410	650
Approximately 2,000 feet upstream of County Road 277	7.8	130	230	280	450
LOVE CREEK					
Upstream of State Route 24	15.6	260	470	580	900
Upstream of a point approximately 2,000 feet downstream of County Road 277	11.2	190	330	410	650
Upstream of a point approximately 2,000 feet upstream of County Road 277	7.8	130	230	280	450
MARTIN BRANCH					
Upstream of State Route 1	7.1	111	189	231	360
Approximately 50 feet downstream of County Road 261	3.2	57	102	130	210
MIREY BRANCH					
Upstream of confluence with Millsboro Pond	48	55	90	115	180

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
MISPILLION RIVER					
At State Route 1	39.26	820	1,750	1,110	3,440
At confluence of Presbyterian Branch	27.42	670	1,255	1,580	2,650
NANTICOKE RIVER					
Upstream of confluence with Morgan Branch	211.7	2,230	4,080	5,120	8,100
Upstream of confluence with Clear Brook	189.2	1,990	3,620	4,540	7,150
Upstream of confluence with Deep Creek	126.3	1,610	2,970	3,730	6,000
PEMBERTON BRANCH					
Upstream of Mulberry Street	23.1	355	635	780	l,200
Upstream of confluence with Ingram Branch	8.2	115	195	235	360
PEPPER CREEK					
Approximately 2,500 feet upstream of confluence with Vines Creek	10.2	560	1,050	1,360	2,700
PEPPER CREEK FORK 1					
Upstream of confluence with Pepper Creek	1.9	70	135	170	310
PEPPER CREEK FORK 2					
Upstream of confluence with Pepper Creek	0.24	30	75	100	180
PEPPER CREEK FORK 3					
Upstream of confluence with Pepper Creek	0.70	85	190	250	460
PRESBYTERIAN BRANCH					
Upstream of confluence with Mispillion River (Silver Lake)	0.73	70	150	210	370

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
ROSSAKATUM BRANCH					
Upstream of confluence with Broad Creek	6.6	120	225	285	450
ROUND POLE BRANCH					
Upstream of confluence with Broadkill River	7.2	256	503	647	1,302
BUNTINGS BRANCH					
Upstream of confluence with Broadkill River	6.6	490	995	1,310	2,300
SOWBRIDGE BRANCH					
Upstream of dam approximately 500 feet downstream of State Route 1	14.3	180	290	350	530
Upstream of Waples Pond Dam	7.6	75	125	155	350
Upstream of confluence with Piney Branch	4.5	55	90	110	180
Approximately 2,000 feet upstream of County Road 231	1.5	10	15	20	25
TANTROUGH BRANCH					
Upstream of U.S. Route 113	26.4	670	l,250	1,580	2,650
Upstream of confluence with Johnson Branch	13.2	330	610	760	1,300
Upstream of confluence with Beaverdam Branch	4.3	110	190	230	370
VINES CREEK					
Approximately 3,400 feet downstream of Town of Frankford downstream corporate limits	6.85	680	1,500	2,070	3,800
WHARTONS BRANCH					
Upstream of confluence with Indian River	8.4	290	530	670	1,100

TABLE 4A – SUMMARY OF DISCHARGES FOR DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
WHITE CREEK					
Approximately1,000 feet downstream of Town of Ocean View corporate limits	2.8	45	80	100	170
Upstream of confluence with White Creek Ditch	1.7	25	45	60	105
WHITE CREEK DITCH					
Upstream of confluence with White Creek	1.1	20	40	50	80

A summary of the drainage area-peak discharge relationships for the streams studied by limited detailed methods during this countywide FIS revision is shown in Table 4B, “Summary of Discharges for Limited Detailed Study Streams.” Discharges are shown in cubic feet per second (cfs).

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
AKE DITCH					
Upstream of the confluence with Nanticoke River	2.65	*	*	398	*
ALMS HOUSE DITCH					
Upstream of the confluence with Horse Pound Swamp Ditch	2.57	*	*	259	*
Just downstream of Kruger Road	2.03	*	*	330	*
Just downstream of Alms House Road	1.61	*	*	480	*
Approximately 841 feet upstream of Shortly Road	0.94	*	*	513	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
ASKETUM BRANCH					
Upstream of the confluence with Stoney Branch	1.41	*	*	377	*
Just downstream of Delaware State Highway 20	0.96	*	*	575	*
Approximately 0.51 miles upstream of James Road	0.51	*	*	320	*
ATLANTA DEVONSHIRE BRANCH					
Upstream of the confluence with Herring Run	1.00	*	*	112	*
BAKER MILL BRANCH					
Upstream of the confluence with Deep Creek	2.72	*	*	352	*
BLACK SAVANNAH BRANCH					
Upstream of the confluence with Black Savannah Branch Prong 1	1.82	*	*	295	*
Approximately 0.63 miles upstream of Delaware State Highway 20	1.47	*	*	252	*
BLACK SAVANNAH BRANCH PRONG 1					
Upstream of the confluence with Black Savannah Branch	0.13	*	*	26	*
BROAD CREEK					
Approximately 0.50 miles upstream of the confluence with Georgetown Road Branch	73.16	*	*	3,315	*
Upstream of the confluence with Rogers Branch	71.71	*	*	2,349	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
BROAD CREEK PRONG 1					
Upstream of the confluence with Broad Creek	1.97	*	*	324	*
Just downstream of Woodland Ferry Road	1.70	*	*	238	*
Approximately 0.24 miles upstream of Woodland Ferry Road	1.00	*	*	118	*
BUCKS BRANCH					
Upstream of the confluence with Clear Brook Branch	7.91	*	*	562	*
Just downstream of Conrail Road	6.42	*	*	676	*
Upstream of the confluence with Bucks Branch Prong 2	4.93	*	*	732	*
Upstream of the confluence with Bucks Branch	2.78	*	*	465	*
Just downstream of Baker Road	1.38	*	*	670	*
BUCKS BRANCH PRONG 2					
Upstream of the confluence with Bucks Branch	0.85	*	*	154	*
Approximately 0.35 miles upstream of Allen Road	0.49	*	*	142	*
BUCKS BRANCH PRONG 5					
Upstream of the confluence with Bucks Branch Prong 5	1.96	*	*	310	*
Approximately 0.56 miles upstream of Wesley Church Road	1.41	*	*	435	*
CLEAR BROOK BRANCH					
Just upstream of Delaware State Highway 18	4.10	*	*	910	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
CLEAR BROOK BRANCH (continued)					
Approximately 0.41 miles upstream of Delaware State Highway 18	2.71	*	*	906	*
Approximately 0.13 miles upstream of Wilson Farm Road	1.95	*	*	751	*
Just downstream of Wesley Church Road	1.55	*	*	695	*
COOL BRANCH					
Upstream of the confluence with Graham Branch	1.52	*	*	258	*
Approximately 0.68 miles upstream of Bunny Lane	1.01	*	*	222	*
COPPER BRANCH					
Upstream of the confluence with Rossakatum Branch	1.89	*	*	229	*
Approximately 843 feet upstream of US Highway 13	0.97	*	*	109	*
COW BRIDGE BRANCH					
Upstream of the confluence with Indian River	31.09	*	*	1,557	*
Approximately 2.46 miles upstream of the confluence with Indian River	29.13	*	*	1,442	*
Upstream of the confluence with Stockley Branch	21.03	*	*	1,201	*
Upstream of the confluence with Eli Walls Branch	13.84	*	*	1,164	*
DEEP BRANCH					
Upstream of the confluence with Peterkins Branch	9.10	*	*	643	*
Approximately 0.39 miles upstream of Deep Branch Road	8.20	*	*	833	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
DEEP CREEK					
Upstream of the confluence with Nanticoke River	60.82	*	*	2,957	*
Approximately 0.64 miles upstream of the confluence with Tubbs Branch	57.29	*	*	2,301	*
Just downstream of Concord Pond Road	56.14	*	*	2,709	*
Upstream of the confluence with Baker Mill Branch	52.94	*	*	2,205	*
Upstream of the confluence with Tyndall Branch	34.59	*	*	1,620	*
Just downstream of Old Furnace Road	32.37	*	*	1,757	*
Approximately 0.22miles upstream of the confluence with Shorts Branch	29.10	*	*	1,581	*
Upstream of the confluence with Rum Bridge Branch	24.07	*	*	1,426	*
Upstream of the confluence with McColleys Branch	12.66	*	*	385	*
Approximately 0.78 miles upstream of Delaware State Highway 18	11.58	*	*	489	*
Upstream of the confluence with Mifflin Ditch	4.24	*	*	383	*
Approximately 0.58 miles upstream of the confluence with Mifflin Ditch	3.23	*	*	329	*
Just downstream of Wilson Hill Road	2.13	*	*	279	*
Approximately 0.87 upstream of Wilson Hill Road	1.36	*	*	218	*
Just downstream of Hunting Club Road	0.89	*	*	262	*
ELI WALLS BRANCH					
Upstream of the confluence with Cow Bridge Branch	6.51	*	*	643	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
ELI WALLS BRANCH (continued)					
Upstream of the confluence with Gills Branch	3.79	*	*	452	*
Just downstream of Cedar Lane	3.38	*	*	603	*
Upstream of the confluence with McGee Ditch	1.44	*	*	721	*
GEORGETOWN VAUGHN DITCH					
Upstream of the confluence with Mifflin Ditch	1.25	*	*	235	*
Just downstream of Piglet Path	0.87	*	*	507	*
GILLS BRANCH					
Upstream of the confluence with Eli Wells Branch	2.09	*	*	254	*
Approximately 0.72 miles upstream of Cedar Lane	1.29	*	*	172	*
GRAHAM BRANCH					
Upstream of the confluence with Cool Branch	0.87	*	*	193	*
HERRING RUN					
Just upstream of Herring Run Road	2.12	*	*	251	*
Approximately 438 feet upstream of Herring Run Road	1.35	*	*	207	*
Just downstream of Ross Station Road	0.98	*	*	119	*
HERRING RUN PRONG 1					
Upstream of the confluence with Herring Run	1.60	*	*	209	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
HOLLY BRANCH					
Upstream of the confluence with Meadow Branch	6.37	*	*	589	*
Approximately 0.85 miles upstream of the confluence with Meadow Branch	6.13	*	*	732	*
Upstream of the confluence with Ward Cordrey Branch	3.11	*	*	462	*
Approximately 0.73 miles upstream of US Highway 13	2.44	*	*	406	*
HORSE POUND SWAMP DITCH					
Upstream of the confluence with Alms House Ditch	1.93	*	*	259	*
Just downstream of Kruger Road	1.17	*	*	230	*
HURLEY DRAIN					
Upstream of the confluence with Nanticoke River	2.43	*	*	335	*
Approximately 0.21 miles upstream of Cloverdale Road	1.94	*	*	399	*
Approximately 0.71 miles upstream of Cloverdale Road	0.49	*	*	70	*
JOBS BRANCH					
Upstream of the confluence with Stoney Branch	3.22	*	*	506	*
Approximately 0.76 miles upstream of the confluence with Stoney Branch	2.87	*	*	960	*
Just downstream of Tyndall Road	2.21	*	*	473	*
Just downstream of East Trap Pond Road	1.29	*	*	712	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
JOBS BRANCH (continued)					
Approximately 0.74 miles upstream of East Trap Pond Road	0.65	*	*	414	*
LAYTON VAUGH DITCH					
Upstream of the confluence with McColleys Branch	4.40	*	*	679	*
Upstream of the confluence with Layton Vaughn Ditch Prong 3	3.49	*	*	359	*
Approximately 1.08 miles upstream of the confluence with Layton Vaughn Ditch Prong 3	3.06	*	*	607	*
Approximately 1.55 miles upstream of the confluence with Layton Vaughn Ditch Prong 3	2.56	*	*	776	*
Approximately 1.83 miles upstream of the confluence with Layton Vaughn Ditch Prong 3	2.20	*	*	798	*
Approximately 0.24 miles upstream of Vaughn Road	1.71	*	*	725	*
Approximately 0.52 miles upstream of Vaughn Road	1.43	*	*	697	*
LITTLE CREEK					
Approximately 1.22 miles upstream of Sussex County Road 492	13.91	*	*	1,002	*
Just upstream of Delaware State Highway 24	13.52	*	*	828	*
Approximately 1.70 miles upstream of Delware State Highway 24	12.26	*	*	896	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
MCCOLLEYS BRANCH					
Upstream of the confluence with Deep Creek	11.12	*	*	978	*
Upstream of the confluence with Layton Vaughn Ditch	6.29	*	*	835	*
MCGEE DITCH					
Upstream of the confluence with Eli Wells Branch	1.49	*	*	401	*
Just downstream of Wood Branch Road	1.18	*	*	608	*
MEADOW BRANCH					
Upstream of the confluence with Holly Branch	5.61	*	*	547	*
Just downstream of Bacons Road	4.91	*	*	645	*
Upstream of the confluence with Meadow Branch	2.43	*	*	594	*
Just downstream of Saint George Road	1.53	*	*	273	*
MEADOW BRANCH PRONG 5					
Upstream of the confluence with Meadow Branch Main	2.18	*	*	813	*
Approximately 0.21 miles upstream of Hastings Lane	1.98	*	*	926	*
Approximately 0.65 miles upstream of Old Crow Road	1.28	*	*	648	*
MEADOW BRANCH PRONG 5 TRIBUTARY 1					
Upstream of confluence with Meadow Branch Prong 5	0.52	*	*	354	*
MIFFLIN DITCH					
Upstream of the confluence with Deep Creek	6.87	*	*	421	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
MIFFLIN DITCH (continued)					
Upstream of the confluence with Georgetown Vaughn Ditch	5.28	*	*	357	*
Upstream of the confluence with Mifflin Ditch Prong 2	3.03	*	*	735	*
Just downstream of US Highway 113	1.46	*	*	301	*
Approximately 1.40 miles upstream of US Highway 113	0.81	*	*	27	*
MIFFLIN DITCH PRONG 2					
Upstream of the confluence with Mifflin Ditch	1.12	*	*	669	*
MIREY BRANCH					
Approximately 0.48 miles upstream of Sussex County Road 326	3.42	*	*	410	*
Upstream of the confluence with Narrow Ditch	1.92	*	*	298	*
Approximately 0.42 miles upstream of the confluence with Narrow Ditch	1.63	*	*	216	*
Approximately 1.01 miles upstream of East Piney Grove Road	0.93	*	*	109	*
NARROW DITCH					
Upstream of the confluence with Mirey Branch	0.69	*	*	91	*
NEW DITCH					
Upstream of the confluence with Raccoon Ditch	5.17	*	*	544	*
Just downstream of Raccoon Ditch Road	4.41	*	*	967	*
Upstream of the confluence with New Ditch Prong 2	3.49	*	*	1,279	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
NEW DITCH PRONG 2					
Upstream of the confluence with New Ditch	0.65	*	*	397	*
PETERKINS BRANCH					
Upstream of the confluence with Deep Branch	4.63	*	*	438	*
Just downstream of Peterkins Road	3.80	*	*	420	*
Approximately 60 feet upstream of Winding Lake Drive	2.71	*	*	915	*
Just downstream of Springfield Road	1.65	*	*	785	*
Approximately 813 feet upstream of Baltimore Avenue	0.85	*	*	478	*
PREIESTLY BRANCH					
Upstream of the confluence with Nanticoke River	1.57	*	*	309	*
Approximately 854 feet upstream of Delaware State Highway 18	0.73	*	*	179	*
QUARTER BRANCH					
At Kent \ Sussex County boundary	2.71	*	*	1, 009	*
Approximately 150 feet downstream of Nine Foot Road	1.53	*	*	705	*
RACCOON DITCH					
Upstream of the confluence with New Ditch	0.80	*	*	167	*
Approximately 0.95 miles upstream of the confluence with New Ditch	0.52	*	*	108	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
ROGERS BRANCH					
Upstream of the confluence with Broad Creek	1.35	*	*	202	*
Just downstream of Chipmans Pond Road	0.80	*	*	99	*
ROSSAKATUM BRANCH					
Approximately 0.72 miles upstream of Sussex County Road 69	5.18	*	*	453	*
Approximately 0.82 miles upstream of Sussex County Road 69	4.47	*	*	448	*
Approximately 0.73 miles upstream of Horsey Road	4.05	*	*	356	*
Just downstream of US Highway 13	2.74	*	*	333	*
Approximately 0.80 miles upstream of Old Stage Road	2.22	*	*	287	*
Approximately 1.28 miles upstream of Old Stage Road	1.39	*	*	206	*
Just downstream of Salt Barn Road	0.57	*	*	77	*
RUM BRIDGE BRANCH					
Upstream of the confluence with Deep Creek	3.72	*	*	374	*
Approximately 0.69 miles upstream of the confluence with Deep Creek	2.46	*	*	483	*
RUM BRIDGE BRANCH PRONG 1					
Approximately 0.61 miles upstream of Rum Bridge Road	0.51	*	*	75	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
SHEEP PEN BRANCH					
Approximately 124 feet upstream of Sussex County Road 326	9.81	*	*	751	*
Approximately 0.42 miles upstream of US Highway 113	9.39	*	*	657	*
Approximately 1.18 miles upstream of US Highway 113	8.61	*	*	701	*
Just downstream of Governor Stockley Road	8.08	*	*	566	*
Approximately 0.91 miles upstream of Governor Stockley Road	6.48	*	*	508	*
Approximately 1.08 miles upstream of Governor Stockley Road	5.71	*	*	442	*
Approximately 1.57 miles upstream of Governor Stockley Road	4.42	*	*	435	*
Just downstream of Shortly Road	3.41	*	*	516	*
Approximately 0.40 miles upstream of Shortly Road	1.77	*	*	358	*
Approximately 0.47 miles upstream of Salt Lane	1.24	*	*	620	*
SHORTS BRANCH					
Upstream of the confluence with Deep Creek	1.80	*	*	267	*
Just downstream of Cokesbury Road	1.25	*	*	174	*
Approximately 0.49 miles upstream of Cokesbury Road	0.43	*	*	64	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
SIMPLER BRANCH					
Upstream of the confluence with White Oak Swamp Ditch	5.83	*	*	987	*
SIMPLER BRANCH PRONG 1					
Upstream of the confluence with Sockorockets Ditch	0.72	*	*	92	*
SOCKOROCKETS DITCH					
Upstream of the confluence with Simpler Branch Prong 1	5.04	*	*	409	*
Approximately 0.43 miles upstream of the confluence with Simpler Branch Prong 1	2.98	*	*	377	*
Just downstream of Johnson Road	2.52	*	*	590	*
Just downstream of Delaware State Highway 30	1.28	*	*	373	*
Approximately 0.80 miles upstream of Delaware State Highway 30	0.83	*	*	479	*
STOCKLEY BRANCH					
Upstream of the confluence with Cow Bridge Branch	6.35	*	*	421	*
Just downstream of Patriots Way	5.54	*	*	373	*
Just downstream of Governor Stockley Road	4.96	*	*	328	*
STONEY BRANCH					
Upstream of the confluence with Asketum Branch	7.57	*	*	817	*
Upstream of the confluence with Jobs Branch	4.16	*	*	385	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
STONEY BRANCH (continued)					
Just downstream of Tyndall Road	3.06	*	*	369	*
Approximately 897 feet upstream of Tyndall Road	1.82	*	*	276	*
Approximately 0.36 miles upstream of Tyndall Road	1.19	*	*	224	*
Approximately 1.32 miles upstream of Tyndall Road	0.66	*	*	171	*
TUBBS BRANCH					
Upstream of the confluence with Deep Creek	2.72	*	*	477	*
TURKEY BRANCH					
Upstream of the confluence with Nanticoke River	1.10	*	*	250	*
Approximately 0.84 miles upstream of Rifle Range Road	0.85	*	*	409	*
Just downstream of Rifle Range Road	0.33	*	*	181	*
TYNDALL BRANCH					
Upstream of the confluence with Deep Creek	15.77	*	*	1,001	*
Just downstream of Fleetwood Pond Road	14.82	*	*	1,086	*
Upstream of the confluence with Mine Hole Branch	10.93	*	*	852	*
Approximately 0.28 miles upstream of Baker Mill Road	9.46	*	*	994	*
WARD CORDREY BRANCH					
Upstream of the confluence with Elliott Horsey Branch	2.74	*	*	804	*
Approximately 0.44 miles upstream of Delaware State Highway 30	1.75	*	*	757	*

TABLE 4B – SUMMARY OF DISCHARGES FOR LIMITED DETAILED STUDY STREAMS – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
WARD CORDREY BRANCH (continued)					
Approximately 0.38 miles upstream of US Highway 13	1.45	*	*	716	*
Approximately 0.68 miles upstream of East Snake Road	0.88	*	*	480	*
WHITE OAK SWAMP DITCH					
Upstream of the confluence with Simpler Branch	1.92	*	*	211	*
WILLIAM H NEWTON DITCH					
Upstream of the confluence with Clear Brook	1.28	*	*	149	*

* Data Not Available

Frequency-discharge, drainage area curves for Deep Branch and Mullet Run are shown in Figure 1.

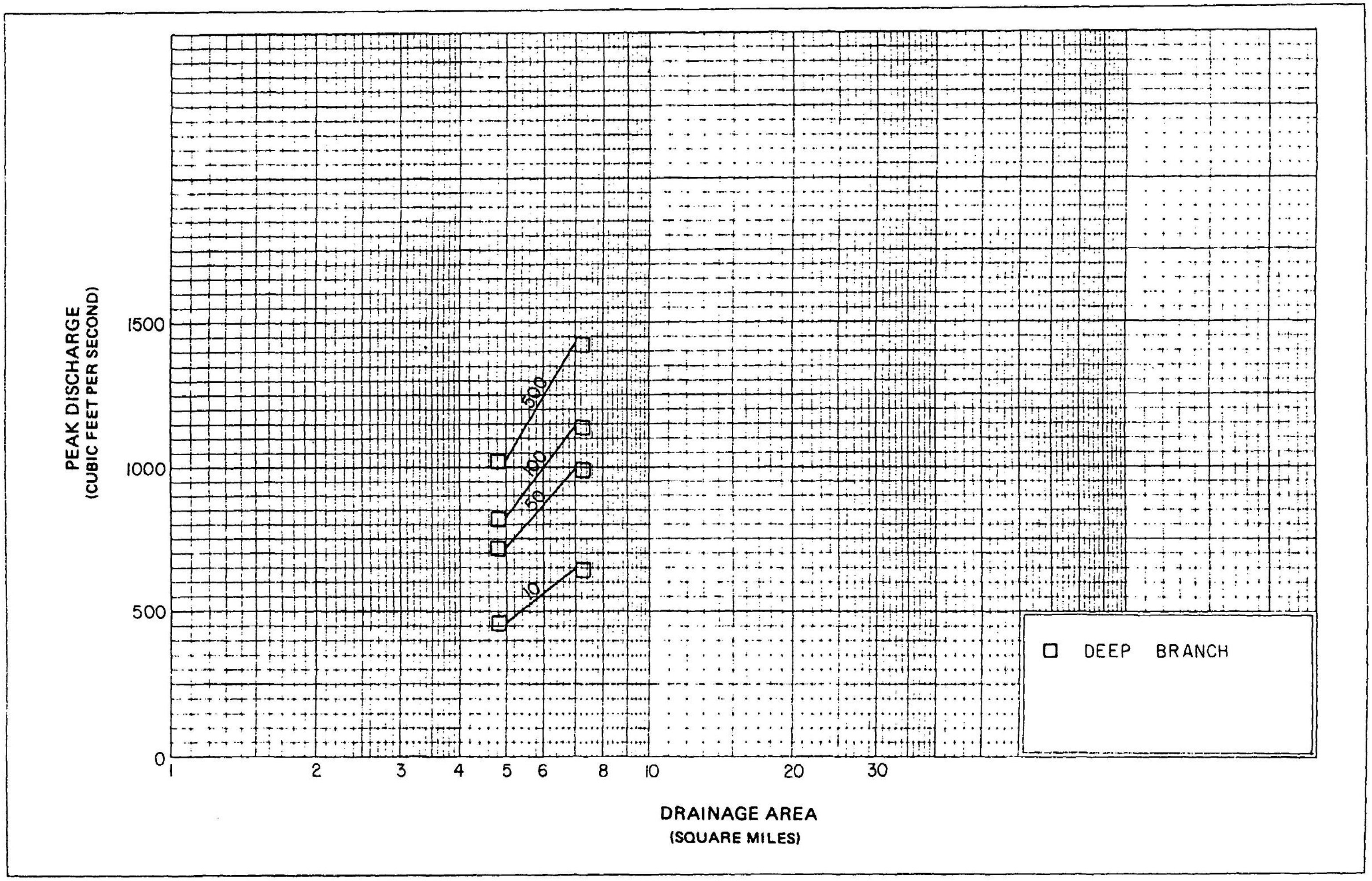

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

DEEP BRANCH

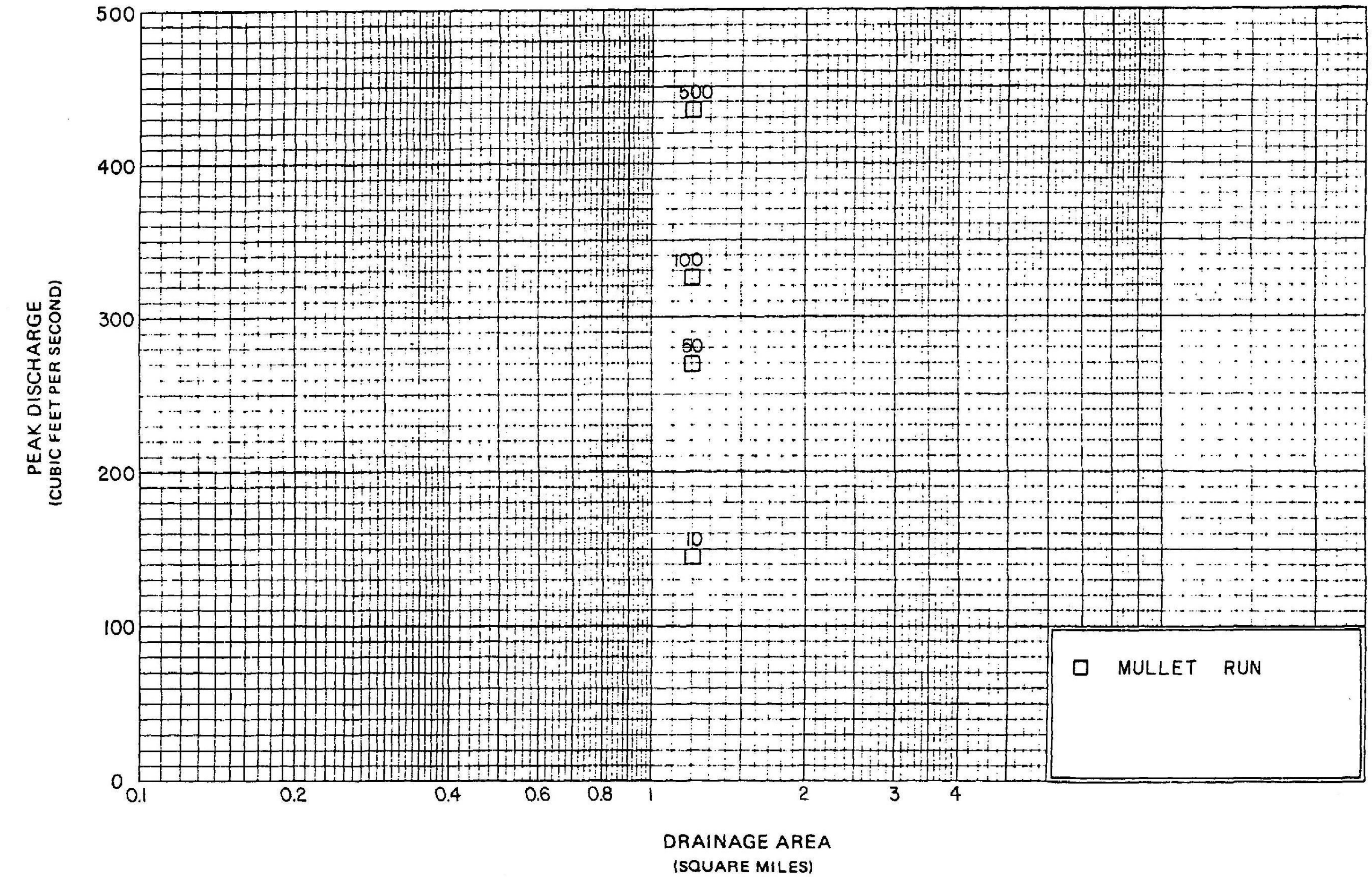

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

MULLET RUN

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5-foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2). Unless specified otherwise, the hydraulic analyses for these studies were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations shown on the Flood Profiles and FIRM (Exhibits 1 and 2) are referenced to NAVD88.

For the streams in the City of Milford that were not revised in the June 16, 1995, countywide FIS (Deep Branch, Misspillion River, and Mullet Run), cross sections for the flooding sources studied by detailed methods were obtained from field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry. All other cross sections were obtained by photogrammetry using aerial photography (Aerial Data Reduction Associates, Inc., 1991). The ground control for the photogrammetry was acquired using conventional surveying techniques (Aerial Data Reduction Associates, Inc., 1991). Bridges, culverts and dams were field surveyed (USACE, 1991).

WSELs of floods of the selected recurrence intervals were computed using the USACE Hydrologic Engineering Center (HEC) HEC-2 step-backwater computer program (HEC, 1984). The methods of determining starting water-surface elevations are shown in Table 5, “Method of Determining Starting Water-Surface Elevations”. Flood profiles were drawn showing computed WSELs for floods of the selected recurrence intervals.

TABLE 5 – METHOD OF DETERMINING STARTING WATER-SURFACE ELEVATIONS

Flooding Source	Starting Water-Surface Elevation Method for 10-, 2-, 1-, and 0.2-Percent Annual Chance Frequency Floods
Bark Pond	normal depth
Betts Pond	normal pool elevation of Millsboro Pond
Bridgeville Branch	normal depth
Broad Creek	1-year tide
Broadkill River	1-year tide (10) normal depth (2, 1, 0.2)
Cart Branch	normal depth
Cedar Creek	1-year tide
Church Branch	normal pool elevation (10, 2, 1)
Swiggetts Pond	normal depth (0.2)
Clear Brook	1-year tide (10, 2, 1) normal depth (0.2)
Deep Creek	1 year tide (10, 2, 1) normal depth (0.2)
Georgetown Road Branch	normal depth
Herring Creek	1-year tide
Chapel Branch	1-year tide
Herring Run	normal pool elevation of Williams Pond (10) normal depth (2, 1, 0.2)
Hopkins Prong	1-year tide Unity Branch
Indian River	1-year tide
Ingram Branch	normal pool elevation of Wagamons Pond
Iron Branch	normal depth
Little Creek	1-year tide (10, 2) normal depth (1, 0.2)
Layton-Vaughan Ditch	normal depth
Love Creek	normal depth
Martin Branch	1-year tide (10, 2, 1) normal depth (0.2)
Mirey Branch	normal depth
Nanticoke River	1-year tide (10, 2, 1) normal depth (0.2)
Pemberton Branch	elevations at last cross section from Broadkill River model (continuation of model)
Pepper Creek	1-year tide (10, 2, 1) normal depth (0.2)
Pepper Creek Fork 1	normal depth

TABLE 5 – METHOD OF DETERMINING STARTING WATER-SURFACE ELEVATIONS (continued)

Flooding Source	Starting Water-Surface Elevation Method for 10-, 2-, 1-, and 0.2-Percent-Annual-Chance Frequency Floods
Pepper Creek Fork 2	normal depth
Pepper Creek Fork 3	normal depth
Presbyterian Branch	normal depth
Rossakatum Branch	1-year tide (10) normal depth (2, 1, 0.2)
Round Pole Branch	1-year tide (10) normal depth (2, 1, 0.2)
Buntings Branch	normal depth
Sandy Branch	normal depth
Sowbridge Branch	1-year tide (10, 2) critical depth (1, 0.2)
Tantrough Branch	normal depth
Vines Creek	normal depth
Whartons Branch	1-year tide (10) normal depth (2, 1, 0.2)
White Creek	1-year tide
White Creek Ditch	1-year tide

Elevations determined for the 10-, 2-, 1-, and 0.2-percent annual chance floods on Silver Lake were used as the starting elevations for Mullet Run. Starting water-surface elevations for Deep Branch were supplied by the USACE in the tidal reach of the river, just downstream of Marshall Millpond.

For the February 8, 1999, countywide FIS revision, the hydraulic characteristics of the Mispillion River and Shoals Branch were studied to determine the elevations of flood waters for the 10-, 2-, 1-, and 0.2-percent-annual-chance recurrence intervals. These water- surface elevations were computed using the HEC-2 standard step backwater computer program (HEC, 1991).

The cross sections for the hydraulic analysis were obtained from the Digital Terrain Model developed for this study (G&O, 1996 and HEC, 1993).

Starting water-surface elevations for the Mispillion River were based on the 1-year tide for all recurrence intervals. Starting water-surface elevations for Shoals Branch were taken from the model for Betts Pond.

For the March 16, 2015, countywide FIS revision, cross section geometries were obtained from a combination of Light Detection and Ranging (LIDAR) land data, USGS 10-meter (m) Digital Elevation Model (DEM), and field measurements of hydraulic and flood control structures for limited detail studied streams.

For the March 16, 2015, countywide FIS revision, the hydraulic model used is the USACE Hydraulic Engineering Center River Analysis System, computer program HEC-RAS, version 3.1.3). Topographic data for the floodplain models was developed using recently acquired LIDAR land data, USGS 10-m DEM, field measurements of hydraulic and flood control structures, and updated hydrologic data. The models were developed using the computer program HEC-RAS version 3.1.3 for the peak 10-, 2-, 1-, and 0.2-percent annual chance frequency storm discharges for limited detail studied streams.

Starting conditions for the hydraulic models were set to normal depth using starting slopes calculated from water surface elevation values taken from the LIDAR data or, where applicable, derived from the water surface elevations of existing effective flood elevations.

For this countywide FIS revision, HEC-RAS, Version 4.1 (USACE, 2010) was used for hydraulic analyses. Topographic data for the floodplain and channel cross sections in the limited detailed models was developed using LiDAR data for Sussex County acquired in 2005 and field measurements of cross drainage structures. Additional data for weirs were provided by DNREC in the form of as-built plans and field survey sketches. The models used 1-percent annual chance peak flood discharge for the limited detailed study streams.

Starting conditions for the hydraulic models were set to normal depth using starting slopes calculated from values taken from the LiDAR data or, where applicable, derived from the water surface elevations of existing effective flood elevations.

Roughness factors (Manning's “n”) used in the hydraulic computations were chosen based on orthophotography. Table 6A, “Manning’s “n” Values”, shows the channel and overbank “n” values for the streams studied by detailed methods.

TABLE 6A – MANNING’S “n” VALUES

Flooding Source	Channel “n” Values	Overbank “n” Values
Bark Pond	0.035	0.120
Betts Pond	0.035	0.120
Shoals Branch	0.030	0.070
Bridgeville Branch	0.033	0.050 – 0.100
Broad Creek	0.033	0.050 – 0.100
Broadkill River	0.035	0.070
Butler Mill Branch	0.040 – 0.045	0.100 – 0.150
Cart Branch	0.034	0.060 – 0.100
Cedar Creek	0.035 – 0.040	0.060 – 0.150
Chapel Branch	0.040 – 0.045	0.100 – 0.150
Church Branch	0.035 – 0.042	0.050 – 0.150

TABLE 6A – MANNING'S "n" VALUES – (continued)

Flooding Source	Channel "n" Values	Overbank "n" Values
Clear Brook	0.033	0.060 – 0.150
Deep Branch	0.013 – 0.040	0.045 – 0.080
Deep Creek	0.033	0.100
Georgetown Road Branch	0.033	0.030 – 0.150
Gravelly Branch	0.040 – 0.045	0.100 – 0.150
Gum Branch	0.040 – 0.045	0.100 – 0.150
Herring Creek	0.033	0.100
Chapel Branch	0.033	0.100
Herring Run	0.025 – 0.042	0.030 – 0.080
Hitch Pond Branch	0.040 – 0.040	0.100 – 0.150
Hopkins Prong	0.033	0.150
Unity Branch	0.033	0.150
Indian River	0.030	0.090
Ingram Branch	0.033	0.120
Iron Branch	0.045 – 0.045	0.100 – 0.150
James Branch	0.040 – 0.045	0.100 – 0.150
Little Creek	0.033	0.080 – 0.150
Love Creek	0.049	0.090
Marshy Hope Creek	0.040 – 0.055	0.100 – 0.150
Martin Branch	0.030 – 0.045	0.090
Mirey Branch	0.050 – 0.065	0.100
Mispillion River	0.020 – 0.040	0.080 – 1.000
Mullet Run	0.013 – 0.040	0.045 – 0.080
Nanticoke River	0.040 – 0.045	0.100 – 0.150
Pemberton Branch	0.033	0.070 – 0.120
Pepper Creek	0.033	0.100
Pepper Creek Fork 1	0.035	0.040 – 0.100
Pepper Creek Fork 2	0.035	0.030 – 0.140
Pepper Creek Fork 3	0.035	0.060 – 0.080
Presbyterian Branch	0.013 – 0.040	0.060
Rossakatum Branch	0.033	0.030 – 0.150
Round Pole Branch	0.040 – 0.050	0.090 – 0.150
Buntings Branch	0.033 – 0.035	0.040 – 0.150
Sandy Branch	0.033 – 0.035	0.040 – 0.150
Smith-Short and Willin Ditch	0.040 – 0.040	0.100 – 0.150
Sowbridge Branch	0.033 – 0.040	0.060 – 0.150
Tantrough Branch	0.033 – 0.035	0.050 – 0.150
Thompson Branch	0.040 – 0.040	0.100 – 0.150

TABLE 6A – MANNING’S “n” VALUES – (continued)

Flooding Source	Channel “n” Values	Overbank “n” Values
Toms Dam Branch	0.040 – 0.040	0.100 – 0.150
Unnamed Tributary of White Marsh Branch	0.040 – 0.040	0.100 – 0.150
Vines Creek	0.025	0.040 – 0.100
Whartons Branch	0.035 – 0.045	0.070 – 0.100
White Creek	0.035	0.040 – 0.100
White Creek Ditch	0.033	0.080
White Marsh Branch	0.040 – 0.040	0.100 – 0.150

Table 6B shows the channel and overbank “n” values for the streams studied by limited detailed methods.

TABLE 6B – MANNING’S “n” VALUES – LIMITED DETAILED STUDY STREAMS

Flooding Source	Channel “n” Values	Overbank “n” Values
Ake Ditch	0.0480	0.050-0.120
Alms House Ditch	0.035-0.120	0.040-0.120
Asketum Branch	0.040-0.045	0.045-0.120
Atlanta Devonshire Branch	0.035	0.040-0.120
Baker Mill Branch	0.040	0.025-0.120
Black Savannah Branch	0.045	0.050-0.120
Black Savannah Branch Prong 1	0.045	0.050-0.120
Broad Creek	0.035-0.045	0.050-0.120
Broad Creek Prong 1	0.040-0.045	0.035-0.120
Bucks Branch	0.025-0.045	0.050-0.120
Bucks Branch Prong 2	0.040	0.050-0.120
Bucks Branch Prong 5	0.040	0.040-0.120
Clear Brook Branch	0.040	0.050-0.120
Cool Branch	0.040	0.025-0.120
Copper Branch	0.040	0.011-0.120
Cow Bridge Branch	0.032-0.045	0.040-0.120
Deep Branch	0.040	0.040-0.120
Deep Creek	0.030-0.055	0.040-0.120
Eli Walls Branch	0.032-0.042	0.030-0.120
Georgetown Vaughn Ditch	0.040-0.048	0.011-0.120

TABLE 6B – MANNING'S "n" VALUES – LIMITED DETAILED STUDY STREAMS – (continued)

Flooding Source	Channel "n" Values	Overbank "n" Values
Gills Branch	0.040-0.043	0.030-0.120
Graham Branch	0.045	0.025-0.120
Herring Run	0.048	0.011-0.120
Herring Run Prong 1	0.048	0.011-0.120
Holly Branch	0.040	0.050-0.120
Horse Pound Swamp Ditch	0.038-0.120	0.030-0.120
Hurley Drain	0.035-0.045	0.050-0.120
Jobs Branch	0.045	0.050-0.120
Layton Vaughn Ditch	0.045-0.120	0.050-0.120
Little Creek	0.033-0.045	0.100
McColleys Branch	0.040	0.060-0.120
McGee Ditch	0.043	0.040-0.120
Meadow Branch	0.045	0.100
Meadow Branch Prong 5	0.045	0.100
Meadow Branch Prong 5 Tributary 1	0.040	0.050-0.120
Mifflin Ditch	0.040-0.055	0.055-0.120
Mifflin Ditch Prong 2	0.040-0.045	0.120
Mirey Branch	0.050	0.040-0.120
Narrow Ditch	0.050	0.050-0.110
New Ditch	0.040-0.050	0.050-0.120
New Ditch Prong 2	0.040	0.050-0.120
Peterkins Branch	0.041-0.045	0.040-0.120
Priestly Branch	0.045	0.040-0.120
Quarter Branch	0.035-0.040	0.045-0.120
Raccoon Ditch	0.045-0.100	0.060-0.120
Rogers Branch	0.045	0.060-0.120
Rossakatum Branch	0.045-0.120	0.040-0.120
Rum Bridge Branch	0.040	0.100-0.120
Rum Bridge Branch Prong 1	0.040	0.120
Sheep Pen Branch	0.040	0.030-0.120
Shorts Branch	0.040-0.045	0.050-0.120
Simpler Branch	0.041	0.040-0.120
Simpler Branch Prong 1	0.042	0.040-0.120
Sockorockets Ditch	0.041	0.040-0.120
Stockley Branch	0.040	0.040-0.120

TABLE 6B – MANNING'S "n" VALUES – LIMITED DETAILED STUDY STREAMS – (continued)

Flooding Source	Channel "n" Values	Overbank "n" Values
Stoney Branch	0.045-0.050	0.050-0.120
Tubbs Branch	0.040	0.011-0.120
Turkey Branch	0.045	0.011-0.120
Tyndall Branch	0.035-0.060	0.038-0.120
Ward Cordrey Branch	0.045	0.050-0.120
White Oak Swamp Ditch	0.041	0.040-0.120
William H Newton Ditch	0.045	0.050-0.120

Flood profiles were drawn to an accuracy of 0.5 foot showing computed water-surface elevations for the 10-, 2-, 1-, and 0.2-percent annual chance frequency floods. The backwater effect of the corresponding frequency event of the appropriate flooding source was superimposed on the lower reaches of each fluvial flooding source studied by detailed methods.

Flood elevations are often raised by debris jams during major floods. The hydraulic analyses for this study, however, are based on the effects of unobstructed flow and existing conditions at the time field surveys were performed. The elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed and do not fail.

The category of "Limited Detail" is assigned to areas where "unnumbered" A-zones are shown on the effective maps, and communities have requested new/upgraded studies, but the level of projected development does not warrant a detailed study. It is also applied to lakes that do not have level gauge data, and will be included in a hydraulic model. The level of effort includes collection of an orthophoto, LiDAR and limited survey of structures, nomination of flow rates, and the development of HEC-RAS hydraulic models.

For the purposes of this document "limited survey" refers to survey of man-made hydraulic obstructions, such as dams, bridges and culverts, and to the survey of the outlet channels of lakes with natural outlet controls. The purpose of collecting "limited survey" is to enhance the accuracy of the hydraulic model thus allowing the development and publication of "Advisory Base Flood Elevations (BFEs)." Engineering drawing plans and Department of Transportation (DOT) hydraulic studies may be substituted for limited survey, where appropriate and available.

Table 7, "Limited Detailed Flood Hazard Data," includes flood hazard data for streams with limited detailed studies. Flood data tables for each cross section included in this flood study update have been developed.

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Ake Ditch			
A	1,075	368	17.8
B	1,716	368	22.7
C	2,135	368	24.7
D	3,000	368	26.9
E	3,716	368	28.9
F	4,261	368	32.0
G	4,802	368	34.1
H	5,276	368	35.6
Alms House Ditch			
A	456	259	31.5[2]
B	1,438	259	31.5[2]
C	2,500	259	31.6
D	3,496	259	32.8
E	4,500	259	34.1
F	6,156	259	37.0
G	7,035	330	38.6
H	8,000	330	39.7
I	9,203	330	42.0
J	10,327	330	42.0
K	11,484	480	42.6
L	12,691	480	44.6
M	13,708	480	45.6
N	14,701	513	46.3
Asketum Branch			
A	348	377	31.4[2]
B	2,500	377	35.9
C	4,500	377	37.2
D	6,500	575	42.6
E	8,673	575	46.2
F	11,000	320	46.7
Atlanta Devonshire Branch			
A	404	112	25.7[2]
B	1,395	112	25.7[2]
C	1,960	112	26.5

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Baker Mill Branch			
A	561	352	11.2[2]
B	1,532	352	11.2[2]
C	2,634	352	12.9
D	3,500	352	14.9
E	4,500	352	17.9
F	5,500	352	20.9
G	6,459	352	24.0
H	7,500	352	27.5
Black Savannah Branch			
A	8,573	295	30.5
B	9,500	295	33.6
C	10,604	295	36.3
D	11,359	295	37.2
E	12,000	295	38.2
F	13,000	295	39.3
G	14,000	251	39.9
Black Savannah Branch Prong 1			
A	377	26	28.2[2]
B	1,500	26	32.4
C	2,966	26	34.8
Broad Creek			
T	4,953	3,315	11.3
U	6,058	2,349	11.3
V	7,699	2,349	11.7
Broad Creek Prong 1			
A	1,049	324	7.7
B	1,500	324	10.7
C	2,000	324	11.6
D	3,000	324	15.1
E	4,000	324	15.4
F	4,707	238	19.4
G	5,639	118	19.8
Bucks Branch			
A	399	562	30.8[2]
B	1,500	562	30.8[2]
C	2,500	562	30.8[2]

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station**[1]	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Bucks Branch (continued)			
D	3,560	562	30.8[2]
E	4,500	562	30.8[2]
F	5,500	562	30.8[2]
G	6,390	562	30.8[2]
H	7,000	676	30.8[2]
I	8,000	676	30.8[2]
J	9,000	676	30.8[2]
K	10,000	732	30.8[2]
L	12,000	732	31.3
M	14,000	465	33.9
N	16,000	465	35.8
O	18,000	465	36.3
P	20,000	465	37.3
Q	22,000	465	39.3
R	24,037	670	43.5
Bucks Branch Prong 2			
A	500	154	30.8[2]
B	1,500	154	33.0
C	2,500	154	33.2
D	3,533	142	35.7
E	5,500	142	38.5
Bucks Branch Prong 5			
A	366	310	31.4[2]
B	1,500	310	32.3
C	2,500	310	33.5
D	3,500	435	35.4
E	4,500	435	37.6
Butler Mill Branch			
A	3,495[3]	681	6.0[2]
B	4,157[3]	681	6.0[2]
C	4,861[3]	681	6.0[2]
D	5,332[3]	681	6.0[2]
E	5,807[3]	681	6.0[2]
F	6,307[3]	681	6.0[2]
G	7,142[3]	681	6.7

[1] Distance from mouth

[2] Includes backwater effects

[3] Feet above confluence with Nanticoke River/Lewes Creek

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station**	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Butler Mill Branch (continued)			
H	7,807[2]	681	6.7
I	8,307[2]	681	6.7
J	8,647[2]	681	6.8
K	9,085[2]	681	6.9
L	9,734[2]	681	6.9
M	10,167[2]	681	9.6
N	10,636[2]	681	10.3
O	11,368[2]	662	11.7
P	12,128[2]	618	13.1
Q	12,766[2]	618	13.9
R	13,073[2]	618	14.4
S	13,706[1]	618	15.0
T	14,269[1]	618	16.0
U	14,807[1]	618	17.3
V	15,307[1]	618	18.2
W	15,840[1]	502	19.3
X	16,366[1]	502	19.9
Y	16,909[1]	502	20.4
Z	17,666[1]	502	21.4
AA	18,007[1]	502	22.0
Chapel Branch			
A	3,059[2]	539	6.0[3]
B	3,386[2]	539	6.0[3]
C	3,848[2]	539	6.0[3]
D	4,019[2]	539	6.0[3]
E	4,688[2]	485	6.0[3]
F	5,244[2]	485	6.0[3]
G	5,586[2]	485	6.0[3]
H	6,021[2]	485	6.0[3]
I	6,364[2]	485	6.0[3]
J	6,744[2]	485	6.0[3]
K	7,273[2]	485	6.0[3]
L	7,570[2]	485	6.0[3]
M	7,796[2]	485	6.0[3]
N	8,018[2]	485	6.0[3]
O	8,367	485	6.0[2]
P	8,658	485	6.0[2]
Q	8,945	485	6.0[2]
R	9,256	485	6.0[2]

[1] Feet above confluence with Nanticoke River/Lewes Creek
[2] Feet above confluence with Nanticoke River
[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Chapel Branch (continued)			
S	9,633	485	6.0[2]
T	10,138	485	6.0[2]
U	10,971	485	6.4
V	11,398	485	6.9
W	11,750	485	7.5
X	12,185	485	8.5
Y	12,762	450	9.8
Z	12,992	450	10.7
AA	13,495	450	18.0
AB	14,277	450	18.3
AC	14,382	450	18.3
AD	14,815	450	18.4
AE	15,321	450	18.4
AF	15,540	450	18.4
AG	15,887	450	18.5
AH	16,334	417	18.6
AI	16,860	417	18.8
AJ	17,343	417	19.2
AK	17,938	417	19.9
AL	18,368	376	22.6
AM	18,506	376	22.6
AN	19,075	376	22.7
AO	19,553	376	22.9
AP	20,086	376	23.1
AQ	20,532	376	23.5
AR	21,197	376	24.6
AS	21,633	376	25.0
AT	22,148	376	25.3
AU	22,646	376	25.6
AV	22,819	376	25.7
AW	23,042	376	25.9
AX	23,347	376	26.3
AY	23,617	376	26.9
AZ	23,889	376	27.4
BA	24,211	376	27.8
BB	25,002	376	28.5
BC	23,387	376	28.9
BD	25,579	331	29.3
BE	26,025	239	32.6
BF	26,346	239	32.6

[1] Feet above confluence with Nanticoke River

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Chapel Branch (continued)			
BG	26,851[2]	239	32.7
BH	27,365[2]	239	32.8
BI	27,835[2]	239	32.9
BJ	28,353[2]	239	33.3
BK	28,880[2]	239	33.6
BL	29,236[2]	239	34.0
Clear Brook Branch			
X	32,367	911	30.8
Y	33,000	911	31.0
Z	34,000	911	31.5
AA	35,000	845	32.2
AB	35,942	845	33.6
AC	37,000	845	34.6
AD	38,000	845	35.2
AE	39,000	845	35.9
AF	39,931	845	37.2
AG	41,000	751	42.7
AH	41,938	751	42.8
AI	43,000	751	42.8
AJ	43,931	751	42.8
AK	45,000	695	42.9
AL	45,829	695	43.0
Cool Branch			
A	6,004	258	17.0
B	7,000	258	18.9
C	8,139	258	23.8
D	8,946	258	24.4
E	9,916	258	26.2
F	11,000	258	28.2
G	12,500	222	30.4
Cooper Branch			
A	57	229	6.7[3]
B	464	229	8.5
C	964	229	10.4
D	2,053	229	12.9
E	2,763	229	18.1
F	4,000	109	26.9
G	5,000	109	26.9

[1] Distance from mouth

[2] Feet above confluence with Nanticoke River

[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station[1]**	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Cow Bridge Branch			
A	1,483	1,557	8.3[2]
B	3,110	1,557	8.3[2]
C	4,554	1,557	8.3[2]
D	5,578	1,557	8.3[2]
E	6,519	1,557	8.3[2]
F	7,514	1,557	8.3[2]
G	8,564	1,557	8.3[2]
H	9,979	1,557	8.3[2]
I	11,000	1,557	8.8
J	12,064	1,557	10.3
K	13,000	1,442	11.7
L	13,500	1,442	12.0
M	14,513	1,442	12.8
N	15,966	1,442	14.3
O	17,587	1,201	15.5
P	18,500	1,201	16.0
Q	19,981	1,201	19.4
R	21,500	1,164	19.5
S	23,500	1,164	19.6
Deep Branch			
A	24,943	643	20.0
B	26,543	643	23.0
C	28,002	833	23.2
D	29,467	833	24.1
E	30,849	833	25.8
Deep Creek			
A	13,660	2,709	11.2
B	15,000	2,709	11.2
C	16,000	2,709	11.2
D	17,382	2,205	11.2
E	18,519	2,205	11.2
F	19,500	2,205	11.4
G	20,500	2,205	11.7
H	22,000	2,205	12.2
I	23,000	2,205	12.4
J	23,500	2,205	12.5
K	24,500	2,205	12.9
L	25,500	2,205	13.2
M	27,000	1,620	13.4
N	28,561	1,620	13.7

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Deep Creek (continued)			
O	30,000	1,620	14.2
P	31,000	1,620	14.6
Q	32,000	1,620	15.3
R	33,500	1,620	16.3
S	35,000	1,757	18.7
T	36,000	1,757	19.5
U	37,000	1,757	19.8
V	38,000	1,757	20.1
W	39,500	1,581	20.6
X	40,000	1,581	20.7
Y	41,000	1,581	21.1
Z	42,000	1,581	21.4
AA	43,000	1,581	21.8
AB	44,000	1,426	22.2
AC	45,000	1,426	22.9
AD	46,000	1,426	23.3
AE	47,000	1,426	24.0
AF	757	385	25.1[2]
AG	1,757	385	25.1[2]
AH	2,757	385	25.1[2]
AI	3,795	385	25.1[2]
AJ	4,757	385	25.1[2]
AK	5,757	385	25.1[2]
AL	6,757	385	25.3
AM	7,757	489	26.4
AN	9,257	489	28.0
AO	500	383	28.7[3]
AP	1,500	383	29.2
AQ	2,500	383	31.1
AR	3,563	329	31.5
AS	4,675	329	32.7
AT	5,500	279	34.5
AU	6,500	279	34.6
AV	7,538	279	35.3
AW	8,500	279	36.0
AX	9,500	218	36.8
AY	10,500	218	37.5
AZ	11,500	218	38.6
BA	12,500	218	40.0

[1] Distance from mouth

[2] Includes backwater effects

[3] Includes flooding controlled by effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Eli Walls Branch			
A	433	643	21.2[2]
B	1,496	643	21.2[2]
C	2,688	643	21.2[2]
D	3,500	643	22.0
E	4,631	452	23.4
F	5,500	452	23.6
G	6,500	452	24.1
H	7,459	452	25.0
I	8,500	452	27.5
J	9,500	452	29.2
K	10,998	452	31.5
L	12,472	603	34.3
M	13,500	603	35.2
N	14,422	603	36.1
O	15,500	721	37.3
P	16,500	721	39.1
Q	17,489	721	40.1
R	18,500	721	41.3
Georgetown Vaughn Ditch			
A	316	92	31.9[2]
B	1,000	92	31.9[2]
C	2,000	92	31.9[2]
D	3,000	92	31.9[2]
E	4,000	92	32.8
F	4,769	92	33.9
G	5,426	92	34.4
H	6,000	92	34.9
I	7,000	92	35.6
J	7,866	366	38.5
K	9,000	366	40.9
L	10,000	366	41.4
M	10,915	366	42.0
N	11,552	366	43.6
O	12,409	498	45.2
P	13,245	509	45.2
Gills Branch			
A	223	254	22.2[2]
B	956	254	25.4
C	2,000	254	26.0

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Gills Branch (continued)			
D	3,097	254	31.0
E	3,896	254	31.1
F	5,068	254	34.3
Graham Branch			
A	327	193	15.9[2]
B	826	193	16.8
C	1,777	193	20.8
D	2,454	193	24.3
E	3,046	193	27.4
Gravelly Branch			
A	2,921[3]	1,703	11.4
B	3,468[3]	1,703	11.4
C	3,815[3]	1,703	11.5
D	4,713[3]	1,703	12.0
E	5,170[3]	1,703	12.5
F	5,464[3]	1,703	12.7
G	6,138[3]	1,703	13.1
H	6,758[3]	1,703	14.0
I	7,262[3]	1,703	14.7
J	7,810[3]	1,703	15.3
K	8,138[3]	1,665	15.7
L	8,875[3]	1,665	16.3
M	9,843[3]	1,665	17.0
N	10,410[3]	1,665	17.3
O	10,925[3]	1,665	17.5
P	11,804[3]	1,665	18.8
Q	12,395[3]	1,665	19.3
R	12,976[3]	1,656	19.8
S	13,535[3]	1,656	20.4
T	14,134[3]	1,656	20.9
U	14,697[3]	1,656	21.3
V	15,350[3]	1,656	21.8
W	15,721[3]	1,656	22.0
X	16,670[3]	1,656	23.7

[1] Distance from mouth

[2] Includes backwater effects

[3] Feet above confluence with Nanticoke River

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Gravelly Branch (continued)			
Y	18,660	1,562	29.9
Z	19,331	1,562	30.0
AA	19,844	1,562	30.1
AB	20,319	1,562	30.1
AC	21,013	1,526	30.1
AD	21,358	1,526	30.2
AE	22,387	1,526	30.2
AF	22,999	1,526	30.2
AG	23,502	1,526	30.2
AH	24,412	1,526	30.3
AI	25,563	1,454	30.4
AJ	26,260	1,454	30.5
AK	27,249	1,454	30.7
AL	28,077	1,454	30.8
AM	28,855	1,454	30.9
AN	29,776	1,454	31.0
AO	30,458	1,454	31.1
AP	30,988	1,454	31.2
AQ	31,521	1,443	31.3
AR	32,079	1,443	31.4
AS	32,560	1,443	31.5
AT	33,284	1,443	31.8
AU	34,074	1,419	32.0
AV	35,425	1,419	32.9
Gum Branch			
A	1,088	1,510	21.5[2]
B	1,598	1,510	21.5[2]
C	2,186	1,510	21.5[2]
D	2,730	1,510	21.5[2]
E	3,326	1,510	21.5[2]
F	3,903	1,510	21.6
G	4,447	1,510	21.9
H	5,060	1,510	22.3
I	5,611	1,510	22.6
J	6,117	1,396	22.9
K	6,628	1,396	23.1
L	7,174	1,396	23.4
M	8,158	1,396	24.5
N	8,659	1,396	24.6

[1] Feet above confluence with Nanticoke River

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Gum Branch (continued)			
O	10,050	1,396	26.9
P	10,849	884	27.0
Q	11,318	884	27.0
R	11,717	884	27.0
S	12,209	884	27.1
T	12,707	884	27.2
U	13,216	884	27.3
V	13,731	884	27.4
W	14,328	884	27.6
X	14,742	884	27.7
Y	15,215	884	28.0
Z	15,756	843	28.3
AA	16,216	584	28.8
AB	16,736	584	29.0
AC	17,171	584	29.2
AD	17,784	584	29.7
AE	18,278	584	30.2
AF	17,742	584	30.5
AG	19,289	584	31.0
AH	19,798	570	31.5
AI	20,429	570	32.0
AJ	20,943	570	32.2
AK	21,520	570	32.6
AL	21,972	570	32.9
AM	22,594	537	33.2
AN	23,097	537	33.5
AO	23,632	537	33.8
AP	24,256	537	35.9
AQ	24,979	537	36.1
AR	25,556	537	36.2
AS	26,062	537	36.5
AT	26,564	537	36.7
AU	27,066	537	36.9
AV	27,580	492	37.1
AW	28,083	350	37.5
AX	28,590	350	37.8
AY	29,092	350	38.0
AZ	29,612	350	38.2
BA	30,105	350	38.4
BB	60,621	350	38.6
BC	31,068	350	38.8

[1] Feet above confluence with Nanticoke River

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Gum Branch (continued)			
BD	31,575[3]	350	39.6
BE	32,160[3]	350	39.9
BF	32,664[3]	350	40.1
BG	33,171[3]	350	40.2
BH	33,682[3]	350	40.5
BI	34,193[3]	350	40.7
BJ	34,699[3]	300	40.9
BK	35,207[3]	300	41.1
BL	35,739[3]	300	41.5
BM	36,206[3]	300	41.7
BN	36,707[3]	300	42.1
BO	37,299[3]	300	42.5
BP	37,809[3]	300	42.8
Herring Run			
P	9,570	251	29.4
Q	10,000	207	29.4
R	10,685	207	29.4
S	11,287	207	30.9
T	12,000	207	30.9
U	13,000	207	31.1
V	14,000	207	31.7
W	14,920	119	34.0
Herring Run Prong 1			
A	440	209	14.5[2]
B	965	209	14.5
C	1,389	209	17.8
D	1,596	209	21.2
Hitch Pond Branch			
A	321	1,779	18.9
B	999	1,779	19.4
C	1,427	1,779	19.6
D	1,911	1,779	20.0
E	3,703	1,779	22.0
F	4,180	1,779	22.3
G	4,746	1,779	22.5
H	5,193	1,779	22.7

[1] Distance from mouth

[2] Includes backwater effects

[3] Feet above confluence with Nanticoke River

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Hitch Pond Branch (continued)			
I	5,708	1,779	23.1
J	6,201	1,779	23.4
K	6,737	1,779	23.8
L	7,325	1,779	24.2
M	7,811	1,779	24.5
N	8,375	1,753	25.0
O	8,911	1,327	25.4
P	9,491	1,176	25.7
Q	10,428	1,176	26.6
R	11,621	1,176	31.3
S	12,154	1,176	31.5
T	12,761	1,176	31.6
U	13,394	1,155	31.7
V	14,074	1,117	31.9
W	14,594	1,117	32.0
X	15,101	1,117	32.1
Y	15,591	1,117	32.2
Z	16,168	1,117	32.2
AA	16,569	1,117	32.3
AB	16,913	1,117	32.3
AC	17,391	1,117	32.7
AD	17,909	1,117	33.1
AE	18,558	583	33.6
AF	19,067	583	34.0
AG	19,618	570	34.4
AH	20,607	570	39.4
AI	21,236	570	39.4
Holly Branch			
A	500	589	25.5[2]
B	1,500	589	25.9
C	2,500	589	27.3
D	3,500	589	34.2
E	4,500	732	34.3
F	5,500	732	35.2
G	6,500	732	35.3
H	7,860	732	35.5
I	9,000	462	35.7
J	10,000	462	35.9
K	11,047	462	40.0

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Holly Branch (continued)			
L	12,000	462	40.0
M	13,000	462	40.1
N	13,890	462	40.2
O	15,089	406	40.2
Horse Pound Swamp Ditch			
A	11,788	259	31.5
B	12,609	259	31.6
C	14,000	259	34.9
D	15,500	259	38.5
E	16,500	259	38.7
F	17,500	259	39.1
G	18,500	259	39.9
H	19,500	259	40.9
Hurley Drain			
A	4,984	335	24.1
B	5,958	399	24.6
C	7,000	399	25.8
D	7,848	399	27.0
E	8,279	70	27.0
F	9,502	70	27.0
Iron Branch			
A – L*			
M	9,424[2]	913	18.5
N	9,881[2]	913	18.6
O	10,437[2]	913	18.8
P	10,874[2]	913	19.2
Q	11,367[2]	861	19.6
R	11,875[2]	861	20.3
S	12,236[2]	861	21.0
T	12,739[2]	861	21.9
U	13,289[2]	861	22.8
V	13,828[2]	861	23.5
W	14,285[2]	861	24.1
X	14,760[2]	861	25.0

[1] Distance from mouth

[2] Feet above confluence with Whartons Branch

* Portion of stream studied by detailed methods included in the Floodway Data Tables

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Iron Branch (continued)			
Y	14,241[1]	861	25.9
Z	16,175[1]	861	29.2
AA	16,465[1]	861	29.3
AB	16,938[1]	861	29.5
AC	17,440[1]	861	29.9
James Branch			
A	295[2]	2,749	11.8[3]
B	910[2]	2,749	11.8[3]
C	1,484[2]	2,749	11.8[3]
D	2,577[2]	2,749	12.5
E	3,266[2]	2,749	13.1
F	3,751[2]	2,749	13.3
G	4,224[2]	2,749	13.6
H	4,859[2]	2,749	14.0
I	5,301[2]	2,749	14.3
J	5,822[2]	2,749	14.5
K	6,296[2]	2,749	14.7
L	6,803[2]	2,749	14.9
M	7,204[2]	2,719	15.2
N	7,616[2]	2,700	15.4
O	7,125[2]	2,700	15.6
P	8,701[2]	2,700	15.8
Q	9,256[2]	2,671	16.1
R	9,753[2]	2,671	16.3
S	10,208[2]	2,671	16.5
T	10,748[2]	2,671	16.7
U	11,269[2]	2,671	16.8
V	11,737[2]	2,671	17.0
W	12,229[2]	2,671	17.3
X	12,693[2]	2,671	17.7
Y	13,370[2]	2,671	18.1
Z	13,783[2]	2,648	18.2
AA	14,370[2]	2,648	18.6
AB	15,081[2]	1,312	19.2
AC	15,586[2]	1,312	19.4
AD	15,998[2]	1,312	19.7
AE	16,741[2]	1,312	20.5
AF	17,230[2]	1,312	20.9
AG	17,620[2]	1,312	21.8

[1] Feet above confluence with Whartons Branch

[2] Feet above confluence with Elliot Pond Branch

[3] Includes backwater effects from Broad Creek

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
James Branch (continued)			
AH	18,159[2]	1,246	22.8
AI	19,813[2]	1,246	29.1
AJ	20,321[2]	1,246	29.1
AK	20,777[2]	1,246	29.1
AL	21,237[2]	1,246	29.2
AM	21,922[2]	1,246	29.2
AN	22,597[2]	1,246	29.4
AO	23,002[2]	1,246	29.5
AP	23,378[2]	1,246	29.5
AQ	23,858[2]	1,246	29.7
AR	24,357[2]	1,246	29.7
AS	24,783[2]	1,246	30.0
AT	25,372[2]	1,246	30.2
AU	26,085[2]	1,246	30.5
AV	27,487[2]	1,246	33.5
AW	28,096[2]	1,227	33.6
AX	28,915[2]	1,068	33.7
AY	29,489[2]	1,068	33.9
AZ	29,909[2]	1,068	34.1
BA	30,410[2]	1,068	34.4
BB	31,067[2]	1,068	34.8
BC	31,648[2]	1,068	35.1
BD	32,020[2]	1,068	35.3
BE	32,482[2]	1,068	35.5
BF	33,929[2]	1,068	37.9
BG	34,175[2]	1,068	38.0
BH	34,643[2]	1,068	38.1
BI	35,228[2]	1,018	38.2
BJ	35,657[2]	1,018	38.4
BK	36,125[2]	1,018	38.6
Jobs Branch			
A	500	506	34.2[3]
B	2,500	506	34.2[3]
C	4,500	960	36.8
D	6,678	473	41.8
E	8,500	473	42.8
F	10,000	712	46.2
G	12,000	712	47.5
H	13,751	414	47.9

[1] Distance from mouth

[2] Feet above confluence with Elliot Pond Branch

[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station**[1]	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Layton Vaughn Ditch			
A	3,059	679	29.5
B	4,462	359	30.7
C	5,500	359	31.2
D	6,500	359	31.8
E	7,500	359	32.7
F	8,500	359	33.7
G	9,500	359	34.9
H	10,500	607	37.2
I	11,500	607	39.0
J	12,500	776	40.7
K	13,500	776	41.9
L	14,500	798	42.7
M	15,500	798	43.0
N	16,500	725	43.2
O	17,500	725	43.9
P	18,500	697	44.5
Little Creek			
G	7,722	828	18.8
H	9,000	828	18.8
I	10,200	828	18.8
J	11,400	828	18.8
K	13,800	828	18.8
L	15,000	828	19.1
M	16,207	896	19.8
N	17,400	896	21.1
O	18,600	896	22.0
P	19,889	896	25.5
Marshy Hope Creek			
A	820[2]	5,333	25.6
B	1,305[2]	5,292	25.7
C	1,886[2]	5,225	25.8
D	2,348[2]	5,225	25.8
E	2,863[2]	5,225	25.9
F	3,363[2]	5,225	26.0
G	3,861[2]	5,225	26.1

[1] Distance from mouth

[2] Feet above county boundary

[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Marshy Hope Creek (continued)			
H	4,304	5,225	26.2
I	4,802	5,225	26.3
J	5,308	5,221	26.4
K	5,878	5,221	26.6
L	6,430	5,221	26.7
M	6,944	5,221	26.7
N	7,467	5,221	26.8
O	8,068	5,221	27.0
P	8,650	5,221	27.1
Q	9,433	5,130	27.2
R	10,012	5,130	27.3
S	10,429	5,130	27.5
T	10,954	5,130	27.6
U	11,427	5,130	27.8
V	11,923	5,130	27.9
W	12,407	5,130	28.1
X	13,372	5,130	28.3
Y	14,860	5,130	29.7
Z	15,355	5,058	29.8
AA	15,947	5,058	29.9
AB	16,429	5,058	30.0
AC	16,930	5,058	30.1
AD	17,430	5,058	30.1
AE	17,930	5,058	30.2
AF	18,786	5,058	30.4
AG	19,351	5,058	30.5
AH	20,114	4,785	30.7
AI	20,520	4,785	30.8
AJ	20,956	4,785	30.9
AK	21,421	4,785	31.0
AL	21,954	4,785	31.2
AM	22,441	4,785	31.3
AN	22,897	4,785	31.4
AO	23,256	4,785	31.5
AP	23,815	4,785	31.7
AQ	24,449	4,785	31.9
AR	24,950	4,785	32.0
AS	25,450	4,785	32.1
AT	26,057	4,785	32.3
AU	26,601	4,785	32.4
AV	27,409	4,785	32.5

[1] Feet above county boundary

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
McColleys Branch			
A	48,264	978	25.1
B	49,178	978	25.4
C	49,743	978	28.0
D	50,743	978	28.3
E	51,243	835	28.3
F	51,743	835	28.5
G	52,810	835	28.8
H	53,743	835	29.2
McGee Ditch			
A	442	401	37.0[2]
B	2,000	401	38.0
C	2,990	401	39.1
D	3,909	608	41.4
E	5,000	608	41.8
F	6,000	608	42.7
G	6,910	608	43.4
Meadow Branch			
A	21,070	547	25.6
B	22,200	547	25.7
C	23,400	547	26.2
D	24,600	547	27.2
E	25,800	547	29.0
F	26,882	547	31.0
G	28,200	645	34.2
H	29,400	645	35.1
I	30,000	594	35.6
J	30,600	594	35.9
K	33,000	594	37.3
L	35,113	273	42.5
Meadow Branch Prong 5			
A	81	813	35.3
B	557	813	38.7
C	1,000	813	41.9
D	2,500	813	43.1
E	3,500	813	43.4
F	4,839	813	43.9
G	6,000	926	45.8

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station**[1]	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Meadow Branch Prong 5 (continued)			
H	7,000	926	46.1
I	8,954	926	47.1
J	11,000	648	47.3
Meadow Branch Prong 5 Tributary 1			
A	445	354	47.2[2]
B	1,274	354	47.2[2]
C	2,000	354	47.2[2]
Mifflin Ditch			
A	10,257	421	28.8
B	11,759	421	30.0
C	12,757	421	30.8
D	13,757	421	31.6
E	15,257	357	32.7
F	16,257	357	33.4
G	17,757	357	34.6
H	18,757	357	35.2
I	19,257	357	35.5
J	20,257	357	36.2
K	22,257	357	37.7
L	23,084	735	38.9
M	25,257	735	40.3
N	27,257	735	41.9
O	28,757	735	42.7
P	29,757	301	43.6
Q	31,757	301	44.1
R	33,257	301	45.0
S	34,757	301	45.0
T	36,757	27	45.1
U	38,757	27	45.1
Mifflin Ditch Prong 2			
A	70	669	38.0
B	1,000	669	39.5
C	2,000	669	40.4
D	3,000	669	41.3
E	4,000	669	42.3
F	4,500	669	42.4

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Mirey Branch			
I	9,500	410	19.3
J	10,500	410	20.5
K	12,000	410	24.1
L	12,823	410	25.0
M	13,672	298	25.9
N	14,500	298	27.3
O	15,329	216	27.8
P	16,000	216	30.5
Q	16,985	216	30.6
R	18,000	216	30.8
S	19,000	216	31.6
T	20,000	216	33.4
U	20,962	109	34.3
V	21,644	109	36.9
W	22,500	109	37.0
Nanticoke River			
A – N*			
O	32,948[2]	3,730	6.5
P	33,895[2]	3,730	6.7
Q	34,295[2]	3,730	6.8
R	34,947[2]	3,730	7.0
S	35,447[2]	3,730	7.1
T	35,857[2]	3,730	7.2
U	36,646[2]	3,730	7.3
V	37,109[2]	3,730	7.4
W	37,891[2]	3,730	7.5
X	38,427[2]	3,730	7.5
Y	39,249[2]	3,730	7.6
Z	39,987[2]	3,730	7.7
AA	40,561[2]	3,730	7.8
AB	41,061[2]	3,730	7.8
AC	41,847[2]	3,730	8.0
AD	42,418[2]	3,730	8.0
AE	43,189[2]	3,730	8.0
AF	44,405[2]	3,730	8.0
AG	45,268[2]	3,450	8.1
AH	46,342[2]	3,450	8.7
AI	46,760[2]	3,450	8.8
AJ	47,416[2]	3,450	9.4

[1] Distance from mouth

[2] Feet above confluence with Morgan Branch

[*] Portion of stream superseded by updated coastal analysis

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Nanticoke River (continued)			
AK	47,932	3,450	9.8
AL	48,499	3,450	10.1
AM	49,072	3,450	10.3
AN	49,637	3,450	10.6
AO	49,933	3,450	10.8
AP	50,609	3,450	11.1
AQ	51,097	3,450	11.4
AR	51,658	3,450	11.7
AS	52,322	3,450	12.2
AT	52,927	3,450	12.6
AU	53,646	3,450	13.0
AV	54,581	3,450	13.5
AW	55,288	3,450	13.6
AX	55,889	3,450	13.8
AY	56,315	3,450	14.1
AZ	58,582	3,450	16.3
BA	59,236	3,450	16.4
BB	60,052	3,450	16.6
BC	60,830	3,450	16.8
BD	61,327	3,450	16.9
BE	61,843	3,450	17.1
BF	62,572	3,450	17.4
BG	63,269	3,450	17.7
BH	63,807	3,450	18.0
BI	64,637	3,450	18.3
BJ	64,962	3,450	18.5
BK	65,526	3,450	18.8
BL	66,073	3,450	19.2
BM	66,604	3,450	19.6
BN	68,952	3,450	21.5
BO	69,525	3,037	21.6
BP	70,149	3,037	21.8
BQ	70,787	3,037	22.1
BR	71,183	3,037	22.3
BS	71,683	3,037	22.5
BT	72,375	3,037	22.6
BU	73,101	3,037	22.9
BV	73,694	3,037	23.3
BW	74,336	3,037	23.4
BX	74,677	3,037	23.7
BY	75,384	3,037	24.5

[1] Feet above confluence with Morgan Branch

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Nanticoke River (continued)			
BZ	75,949	2,588	24.8
CA	76,472	2,588	25.1
CB	77,111	2,588	25.5
CC	78,366	2,588	27.1
CD	78,900	2,588	27.3
CE	79,481	2,588	27.8
CF	79,950	2,588	28.0
CG	80,432	2,588	28.2
CH	80,860	2,499	28.5
CI	81,375	2,499	28.6
CJ	82,968	2,499	31.4
CK	83,520	2,499	31.5
CL	84,047	2,499	31.6
CM	84,534	2,499	31.7
CN	85,012	2,499	31.8
CO	85,435	2,499	31.8
CP	85,813	2,499	31.9
CQ	86,242	2,440	32.1
CR	86,885	1,893	32.3
CS	87,203	1,893	32.4
CT	87,791	1,893	32.7
CU	88,358	1,893	33.0
CV	88,938	1,893	33.1
CW	89,644	1,893	33.4
CX	90,257	1,893	33.6
CY	90,754	1,893	33.9
CZ	91,357	1,893	34.2
DA	92,031	1,893	34.5
DB	92,592	1,893	34.7
DC	93,139	1,893	35.1
DD	93,636	1,893	35.3
DE	94,136	1,893	35.6
DF	94,628	1,831	35.8
DG	95,264	1,517	36.1
DH	95,956	1,517	36.6
DI	96,667	1,517	37.1
DJ	97,098	1,517	37.5
DK	97,706	1,517	38.0
DL	98,160	1,517	38.4
DM	98,683	1,517	38.7
DN	99,309	1,517	38.9

[1] Feet above confluence with Morgan Branch

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Nanticoke River (continued)			
DO	99,830[2]	1,517	39.2
DP	100,461[2]	1,517	39.7
DQ	100,857[2]	1,517	39.9
DR	101,307[2]	1,517	40.8
DS	101,870[2]	1,517	41.3
DT	102,390[2]	1,517	41.6
DU	102,982[2]	1,517	41.9
DV	103,602[2]	1,517	42.0
DW	104,244[2]	1,517	42.2
DX	104,838[2]	1,517	42.4
DY	105,383[2]	1,517	42.7
DZ	106,050[2]	1,517	43.0
EA	106,720[2]	1,517	43.2
EB	107,966[2]	1,009	43.6
EC	108,605[2]	1,009	43.7
ED	109,322[2]	1,009	43.9
EE	109,832[2]	1,009	44.0
EF	110,329[2]	1,009	46.0
EG	110,775[2]	1,009	46.1
EH	111,356[2]	1,009	46.2
EI	112,065[2]	1,009	46.4
EJ	112,853[2]	1,009	46.6
EK	113,665[2]	980	46.8
EL	114,359[2]	980	47.0
Narrow Ditch			
A	154	91	25.3[3]
B	585	91	26.6
C	1,500	91	26.6
D	2,500	91	26.8
New Ditch			
A	54,743	544	29.7
B	55,743	544	30.1
C	56,743	544	30.7
D	57,243	544	31.0
E	58,243	544	31.7
F	59,243	544	32.4
G	60,243	544	33.1
H	61,174	544	33.9

[1] Distance from mouth

[2] Feet above confluence with Morgan Branch

[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
New Ditch (continued)			
I	62,243	967	37.9
J	63,243	967	39.0
K	64,243	967	40.3
L	65,243	1,279	41.5
M	66,243	1,279	43.8
N	67,243	1,279	45.1
O	68,271	1,279	45.5
New Ditch Prong 2			
A	29	397	41.2[2]
B	1,000	397	42.2
C	2,000	397	42.5
D	3,000	397	43.0
E	4,500	397	44.2
Peterkins Branch			
A	500	438	21.3[2]
B	1,514	438	21.6
C	2,681	438	23.1
D	3,485	438	23.8
E	4,478	438	24.6
F	5,461	438	25.7
G	6,460	438	27.1
H	7,503	420	29.0
I	8,504	420	29.7
J	9,800	420	31.0
K	10,810	420	32.4
L	11,633	420	33.4
M	12,530	420	34.3
N	13,500	420	35.3
O	14,511	420	36.2
P	15,500	915	38.3
Q	16,500	915	39.6
R	17,500	915	40.4
S	18,500	915	41.2
T	19,510	915	41.7
U	20,500	915	42.0
V	21,962	785	42.5

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Priestly Branch			
A	778	309	18.2
B	1,500	309	24.7
C	2,500	309	29.3
D	3,000	309	31.2
E	3,631	309	31.2
F	4,683	179	31.2
Quarter Branch			
A	10,000	1,009	45.0
B	10,999	1,009	47.2
C	12,000	1,009	49.4
D	12,999	1,009	50.9
E	14,500	1,009	52.5
F	15,498	705	54.4
G	16,518	705	55.0
Raccoon Ditch			
A	167	167	29.6[2]
B	1,000	167	29.6[2]
C	2,000	167	30.9
D	3,000	167	32.6
E	4,000	167	34.4
F	5,000	108	35.6
G	6,000	108	36.6
H	6,891	108	37.1
I	8,000	108	38.3
J	8,830	108	38.9
K	9,500	108	39.9
Rogers Branch			
A	591	202	11.3[2]
B	1,500	202	13.4
C	1,937	202	15.5
D	2,440	99	21.2
E	3,000	99	21.2
Rossakatum Branch			
N	9,500	448	22.3
O	10,416	448	22.5
P	11,360	448	22.7
Q	12,000	448	24.7

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station**[1]	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Rossakatum Branch (continued)			
R	12,931	448	24.9
S	13,500	448	25.0
T	14,500	448	25.9
U	15,500	356	26.5
V	16,500	356	27.6
W	17,500	356	28.8
X	18,587	333	32.1
Y	20,000	333	32.5
Z	21,000	333	34.8
AA	22,565	333	35.1
AB	23,500	333	35.3
AC	24,582	333	36.9
AD	25,500	287	37.0
AE	26,500	287	37.1
AF	27,500	206	37.3
AG	28,926	206	38.2
AH	30,000	206	38.2
AI	30,632	206	38.3
AJ	31,500	206	38.4
AK	32,304	77	38.7
AL	33,000	77	38.8
AM	34,000	77	39.1
AN	35,000	77	39.7
AO	36,000	77	40.9
AP	37,061	77	41.1
Rum Bridge Branch			
A	500	374	22.2[2]
B	1,500	374	22.2[2]
C	4,500	483	28.7
D	5,500	483	28.9
E	6,595	483	29.3
Rum Bridge Branch Prong 1			
A	500	75	29.7[2]
B	2,000	75	33.4
C	3,000	75	35.5
D	4,000	75	36.4

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Sheep Pen Branch			
G	500	751	11.7
H	1,500	751	12.0
I	2,711	751	12.8
J	4,000	751	16.1
K	5,046	751	16.5
L	6,026	657	17.1
M	6,967	657	17.8
N	7,949	657	18.6
O	8,855	657	19.4
P	9,818	701	20.5
Q	10,854	701	21.3
R	11,574	701	22.0
S	12,247	701	22.7
T	12,974	701	23.8
U	14,000	701	25.1
V	14,793	701	25.9
W	15,685	701	26.6
X	16,471	566	27.8
Y	17,377	566	28.3
Z	18,536	566	29.2
AA	19,465	566	30.1
AB	20,500	566	31.1
AC	21,500	508	31.9
AD	22,452	442	32.7
AE	23,500	442	33.6
AF	25,000	435	35.3
AG	26,484	435	36.9
AH	27,546	435	38.1
AI	28,500	435	39.0
AJ	29,985	435	40.7
AK	31,500	516	43.5
AL	33,000	358	44.2
AM	34,500	358	44.7
AN	35,500	358	45.4
AO	36,838	620	47.3
Shorts Branch			
A	500	267	20.3[2]
B	1,433	267	20.3[2]
C	2,000	267	21.2
D	2,500	267	22.4

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Shorts Branch (continued)			
E	3,500	267	24.9
F	4,450	174	28.4
G	5,500	174	28.8
H	5,949	174	30.1
I	6,713	174	30.3
Simpler Branch			
A	31,306	987	26.4
B	32,011	987	31.4
Simpler Branch Prong 1			
A	381	92	31.4[3]
B	1,593	92	33.2
C	2,500	92	33.4
Smith-Short and Willin Ditch			
A	842[2]	213	30.3[3]
B	1,245[2]	213	30.3[3]
C	1,635[2]	213	30.3[3]
D	2,045[2]	213	30.3[3]
E	2,496[2]	213	30.3[3]
F	3,095[2]	213	30.3[3]
G	3,788[2]	186	30.3[3]
H	4,310[2]	186	30.3[3]
I	4,798[2]	123	30.3[3]
J	5,157[2]	123	30.9
K	5,977[2]	123	31.7
Sockorockets Ditch			
A	33,052	409	31.4
B	34,475	377	31.5
C	36,000	377	31.6
D	37,519	377	32.5
E	39,000	377	34.1
F	39,970	377	35.2
G	41,500	590	37.9
H	43,080	373	38.9
I	44,500	373	39.2
J	46,000	373	39.9
K	47,500	479	40.3

[1] Distance from mouth

[2] Feet above confluence with Gravelly Branch

[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Stockley Branch			
A	520	421	15.4[2]
B	1,868	421	16.3
C	3,238	373	23.1
D	4,535	373	23.2
E	5,750	373	23.2
F	6,734	373	23.6
G	7,697	373	23.8
H	8,985	328	27.2
I	10,451	328	27.8
Stoney Branch			
A	21,673	817	31.6
B	22,839	817	34.2
C	23,958	385	34.3
D	25,000	385	34.4
E	26,000	385	34.6
F	27,000	385	35.0
G	28,000	385	35.7
H	28,978	369	37.9
I	29,957	276	38.3
J	31,000	224	38.9
K	31,986	224	39.6
L	33,295	224	43.8
M	33,883	224	43.9
N	34,957	224	44.0
O	36,000	171	44.2
Thompson Branch			
A	257	800	33.2[2]
B	805	800	33.2[2]
C	1,211	800	33.4
D	1,914	800	33.8
D	1,914	800	33.8
E	2,347	800	34.0
F	2,771	800	34.2
G	3,360	800	34.8
H	3,813	396	35.4
I	4,722	396	38.1

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Toms Dam Branch			
A	573	863	26.9[2]
B	1,017	863	26.9[2]
C	1,589	863	26.9[2]
D	2,036	863	26.9[2]
E	2,514	863	26.9[2]
F	2,778	863	26.9[2]
G	3,581	863	29.5
H	4,117	863	29.6
I	4,513	863	29.7
J	4,975	808	29.9
K	5,597	808	30.1
L	5,979	708	30.2
M	6,564	708	30.5
N	7,039	708	30.7
O	7,493	708	31.1
P	7,887	628	31.3
Q	8,718	628	31.9
R	9,403	628	32.7
S	9,880	628	35.0
T	10,556	628	35.3
U	11,101	628	35.5
V	11,518	628	35.7
W	12,007	628	35.9
X	12,736	572	36.3
Y	13,052	572	36.5
Z	13,507	572	36.7
AA	14,034	572	37.0
AB	14,530	518	37.3
AC	14,970	518	37.7
AD	15,608	518	38.0
AE	16,074	518	38.2
AF	16,721	518	38.7
AG	17,060	518	38.9
AH	17,540	518	39.1
AI	18,005	518	39.5
AJ	18,611	518	39.8
AK	19,040	518	40.1
AL	19,373	518	40.1
AM	19,879	518	43.9

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Toms Dam Branch (continued)			
AN	20,495	475	43.9
AO	20,933	475	43.9
AP	21,366	475	44.0
Tubbs Branch			
A	2,484	477	7.1
B	3,500	477	9.9
C	4,778	477	15.2
Turkey Branch			
A	4,880	250	32.1
B	5,968	409	32.5
C	6,925	181	33.4
Tyndall Branch			
A	500	1,001	13.3[2]
B	1,500	1,001	13.3[2]
C	2,500	1,001	13.4
D	3,500	1,001	14.9
E	4,500	1,001	16.5
F	5,500	1,001	17.9
G	6,500	1,086	25.2
H	7,500	1,086	25.2
I	9,000	1,086	25.2
J	10,027	1,086	25.2
K	11,500	1,086	25.8
L	14,331	852	27.0
M	16,000	852	28.2
N	17,000	994	28.5
O	18,500	994	29.3
P	19,500	994	30.1
Q	20,623	994	31.3
Ward Cordrey Branch			
A	416	804	35.6[2]
B	1,316	804	35.6[2]
C	1,933	804	36.3
D	2,500	804	36.6

[1] Distance from mouth

[2] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	**Stream Station**[1]	**Flood Discharge (cfs)**	**1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)**
Ward Cordrey Branch (continued)			
E	3,000	804	37.0
F	4,000	757	37.6
G	4,500	757	38.1
H	5,500	757	39.2
I	6,402	757	40.6
J	7,953	757	44.1
K	9,500	716	44.5
L	11,000	716	44.8
M	12,791	480	45.3
White Marsh Branch			
A	1,077[2]	852	43.3[3]
B	1,573[2]	852	43.3
C	2,110[2]	680	44.0
D	2,540[2]	680	45.4
E	3,132[2]	680	45.8
F	3,684[2]	680	46.1
G	4,136[2]	680	46.3
H	4,655[2]	680	46.5
I	5,261[2]	680	46.8
White Oak Swamp Ditch			
A	432	211	26.2[3]
B	1,026	211	27.8
C	1,715	211	28.7
William H Newton Ditch			
A	500	149	13.1[3]
B	1,500	149	13.1[3]
C	2,500	149	14.9
D	3,093	149	16.1
E	4,196	149	17.8

[1] Distance from mouth

[2] Feet above confluence with Nanticoke River

[3] Includes backwater effects

TABLE 7 – LIMITED DETAILED FLOOD HAZARD DATA – (continued)

Cross Section	Stream Station[1]	Flood Discharge (cfs)	1-Percent-Annual-Chance Water Surface Elevation (feet NAVD88)
Unnamed Tributary of White Marsh Branch			
A	353	327	43.5
B	768	327	43.5
C	970	327	45.1
D	2,279	327	51.5
E	3,615	327	51.6
F	3,568	327	53.2
G	4,001	327	53.4
H	4,587	327	53.5

[1] Feet above confluence with White Marsh Branch

For FIRM panels dated July 16, 2004, or later, qualifying bench marks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below the frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain elevation, description, and /or location information for bench marks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with this FIS and FIRM. Interested individuals may contact FEMA to access this data.

3.3 Coastal Analyses

Tidal Flooding Sources

Due to Sussex County's flat topography, many areas are subject to tidal flooding. The following sources produce tidal flooding in Sussex County: the Atlantic Ocean, Delaware Bay, Chesapeake Bay, Indian River Bay, Rehoboth Bay, Assawoman Bay, and Little Assawoman Bay. Along the Atlantic coast, tidal flooding affects the communities of the City of Rehoboth Beach; the Towns of Bethany Beach, Dewey Beach, Fenwick Island, Henlopen Acres, South Bethany; and the unincorporated areas of Sussex County. Communities along the Delaware Bay at risk to tidal flooding are the City of Lewes, the Town of Slaughter Beach, and the unincorporated areas of Sussex County. Inland areas are also at risk as tidal flooding propagates upstream affecting the following communities and associated flooding sources: the City of Milford on the Mispillion River, which discharges into the Delaware Bay; the City of Seaford and the Town of Blades on the Nanticoke River, which discharges into the Chesapeake Bay; the Towns of Bethel and Laurel on Broad Creek, which discharges into the Nanticoke River; the Town of Milton on the Broadkill River, which discharges into the Delaware Bay; the Town of Millsboro on the Indian River, which discharges into Indian River Bay; the Town of Millville on White Creek, which discharges into Indian River Bay; the Town of Ocean View on White Creek Ditch, which discharges into White Creek; and the unincorporated areas of Sussex County on various streams influenced by tidal flooding.

Chesapeake Bay

The Nanticoke River and Broad Creek in western Sussex County are part of the Nanticoke River Basin. The Nanticoke River discharges into the Chesapeake Bay near the Town of Chance, Maryland and is subject to tidal flooding from the bay.

Indian River Bay and Rehoboth Bay

Historical data are listed in the following tabulation for extreme events at two locations, one each on Indian River Bay (Rosedale Beach) and Rehoboth Bay (Dewey Beach) (USGS, 1992).

Storm	Indian River Bay*	Rehoboth Bay*
March 1962	5.9	6.1
1991 Halloween	4.4	3.8
January 1992	5.0	3.0

*Elevation in feet (NAVD88)

Elevations from the two recent storms were recorded at tide gages; the 1962 storm elevations were measured from high watermarks. Additional data for the two more recent storms are available from the USGS at various locations on the bay system.

Note: For the March 16, 2015, countywide FIS revision, please note that FEMA has not included any new flood hazard data for the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

For the March 16, 2015, countywide FIS revision, coastal analysis, considering storm characteristics and the shoreline and bathymetric characteristics of the flooding sources studied, were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along the shoreline. Users of the FIRM should be aware that coastal flood elevations are provided in Table 8, “Summary of Coastal Stillwater Elevations” table in this report. If the elevation on the FIRM is higher than the elevation shown in this table, a wave height, wave runup, and/or wave setup component likely exists, in which case, the higher elevation should be used for construction and/or floodplain management purposes.

An analysis was performed to establish the frequency peak elevation relationships for coastal flooding in Sussex County. The FEMA, Region III office, initiated a study in 2008 to update the coastal storm surge elevations within the states of Virginia, Maryland, and Delaware, and the District of Columbia including the Atlantic Ocean, Chesapeake Bay, the Delaware Bay, and their tributaries. The study replaces outdated coastal analyses as well as previously published storm surge stillwater elevations for all FIS Reports in the study area, including Sussex County, DE, and serves as the basis for updated FIRMs. Study efforts were initiated in 2008 and concluded in 2012.

The Delaware Bay and Atlantic Ocean are the primary flooding sources in Sussex County. Coastal flooding along Delaware Bay north of Cape Henlopen, primarily impacts suburban and rural areas, but there are also large areas of swamp and marshland. Areas south of Cape Henlopen are directly impacted by waves from the Atlantic Ocean as well as Indian River Bay, Rehoboth Bay, and Little Assawoman Bay, which are additional coastal flooding sources in the south portion of Sussex County. The entire Atlantic Ocean coastline and part of the Delaware Bay coastline is comprised of dunes with elevations that vary from four feet to greater than nine feet, NAVD88.

The storm surge study was conducted for FEMA by the USACE and its project partners under Project HSFE03-06-X-0023, "NFIP Coastal Storm Surge Model for Region III" and Project HSFE03-09-X-1108, "Phase II Coastal Storm Surge Model for FEMA Region III". The work was performed by the Coastal Processes Branch (HF-C) of the Flood and Storm Protection Division (HF), U.S. Army Engineer Research and Development Center – Coastal & Hydraulics Laboratory (ERDC-CHL).

The end-to-end storm surge modeling system includes the Advanced Circulation Model for Oceanic, Coastal and Estuarine Waters (ADCIRC) for simulation of 2-dimensional hydrodynamics. ADCIRC was dynamically coupled to the unstructured numerical wave model Simulating Waves Nearshore (SWAN) to calculate the contribution of waves to total storm surge (FEMA, 2010). The resulting model system is typically referred to as SWAN+ADCIRC (FEMA, 2010). A seamless modeling grid was developed to support the storm surge modeling efforts. The modeling system validation consisted of a comprehensive tidal calibration followed by a validation using carefully reconstructed wind and pressure fields from three major flood events for the Region III domain: Hurricane Isabel, Hurricane Ernesto, and extratropical storm Ida. Model skill was accessed by quantitative comparison of model output to wind, wave, water level and high water mark observations.

The tidal surge in the Delaware Bay and Atlantic Ocean affects 20 miles and 25 miles of Sussex County coastline respectively, and that entire length was modeled for overland wave propagation. The fetch length across the Delaware Bay is approximately 11 miles.

It was assumed in the January 6, 2005 FIS that during the 0.2-percent-annual-chance frequency event, the barrier dunes would be breached sufficiently in several places to allow the inland bays direct communication with the ocean. It was assumed that for the Indian River and Rehoboth Bays, dune breaches coupled with increased flow into the bays through Indian River Inlet and from other sources, such as freshwater runoff and the Lewes and Rehoboth Canal, would bring inland bay stages equal to the 0.2-percent-annual-chance frequency ocean stage. Evidence of significant dune breaching and overwash was visible in Delaware Seashore State Park from the January 1992 storm, which produced a stillwater elevation with an associated return period of approximately 25 years.

For the Assawoman and Little Assawoman Bays, the May 2005 FIS assumed that dune breaches coupled with increased flow into the bays through Ocean City Inlet, would bring inland bay stages equal to the 0.2-percent-annual-chance frequency ocean stage. Evidence of significant dune breaching and overwash was visible in the Fenwick Island area from the January 1992 storm which produced a stillwater elevation with an associated return period of approximately 25 years. Further evidence of equal ocean and inland bay stages came from SLOSH (Sea, Lake, and Overland Surges from Hurricanes) Model results in a 1990 hurricane evacuation study (Delaware Division of Emergency Planning and Operations, 1990). This study predicted elevations in the bays for Category 2 and above hurricanes greater than the value for the 0.2-percent-annual-chance frequency event.

The storm-surge elevations for the 10-, 2-, 1-, and .2- percent annual chance floods were determined for the Delaware Bay and are shown in Table 8, "Summary of Coastal Stillwater Elevations." The analyses reported herein reflect the stillwater elevations due to tidal and wind setup effects. The assumption that dunes will breach during the 0.2-percent annual chance flood event was not made for the March 16, 2015 FIS revision but the possibility exists that breaching could occur in an extreme event.

The 0.2-percent-annual-chance frequency event storm surge elevations from the January 2005 FIS are included in Table 9 for the inland bays as an advisory elevation to present potential risks if dunes are breached. Near the inland bays, the FIRMs for the March 16, 2015 revision show the extents of the 0.2-percent annual chance floodplain as represented by the January 2005 FIS as an advisory line. This advisory line estimates the flooding extents if dunes are breached during a 0.2-percent annual chance flood event.

TABLE 8 – SUMMARY OF COASTAL STILLWATER ELEVATIONS

	ELEVATION (feet NAVD88)				
FLOODING SOURCE AND LOCATION	10-Percent Annual Chance	2-Percent Annual Chance	1-Percent Annual Chance	0.2-Percent Annual Chance	Advisory 0.2-Percent Annual Chance
ATLANTIC OCEAN					
Coastline from Cape Henlopen to just South of Dewey Beach	5.7-5.9	6.8-7.2	7.4-7.9	9.0-9.5	N/A
Coastline from just south of Dewey Beach to just north of Bethany Beach	5.5-5.8	6.7-7.0	7.2-7.7	8.5-9.3	N/A
Coastline from just north of Bethany Beach to Delaware - Maryland State line	5.3-6.1*	6.3-7.2*	6.7-7.5*	8.3-8.8*	N/A*
CHESAPEAKE BAY					
Coastline at Chance	3.4-3.8	5.0-5.1	5.7-6.0	6.6-7.4	N/A

TABLE 8 – SUMMARY OF COASTAL STILLWATER ELEVATIONS – (continued)

FLOODING SOURCE AND LOCATION	ELEVATION (feet NAVD88) 10-Percent Annual Chance	2-Percent Annual Chance	1-Percent Annual Chance	0.2-Percent Annual Chance	Advisory 0.2-Percent Annual Chance
DELAWARE BAY					
Coastline from Kent-Sussex County line to Cape Henlopen	5.8-7.1	7.0-8.6	7.6-9.4	9.2-11.1	N/A
INDIAN RIVER BAY					
Entire coastline	4.5-5.6	5.2-6.6	5.4-6.9	5.8-7.5	10.0
REHOBOTH BAY					
Entire coastline	3.9-4.3	4.5-4.9	4.8-5.0	5.0-5.6	10.0
ASSAWOMAN BAY					
Coastline within Sussex County	3.0-3.3	3.5-3.9	4.0-4.7	4.3-4.8	9.4
LITTLE ASSAWOMAN BAY					
Entire coastline	2.7-.2.8	3.8-4.3	4.1-4.6	4.5-5.4	9.4

* This information does not apply for the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

The methodology for analyzing the effects of wave heights associated with coastal storm surge flooding is described in a report prepared by the National Academy of Sciences (NAS) (NAS, 1977). This method is based on three major concepts. First, depth-limited waves in shallow water reach maximum breaking height that is equal to 0.78 times the stillwater depth. The wave crest is 70-percent of the total wave height above the stillwater level. The second major concept is that wave height may be diminished by dissipation of energy due to the presence of obstructions, such as sand dunes, dikes and seawalls, buildings and vegetation. The amount of energy dissipation is a function of the physical characteristics of the obstruction and is determined by procedures prescribed in NAS Report. The third major concept is that wave height can be regenerated in open fetch areas due to the transfer of wind energy to the water. This added energy is related to fetch length and depth.

The coastal analysis for the March 16, 2015 revision involved transect layout, field reconnaissance, erosion analysis, and overland wave modeling including wave setup, wave height analysis and wave runup.

Wave heights were computed across transects that were located along coastal and inland bay areas of Sussex County, as illustrated on the FIRMs. The transects were located with consideration given to existing transect locations and to the physical and cultural characteristics of the land so that they would closely represent conditions in the locality.

Each transect was taken perpendicular to the shoreline and extended inland to a point where coastal flooding ceased. Along each transect, wave heights and elevations were computed considering the combined effects of changes in ground elevation, vegetation, and physical features. The stillwater elevations for a 1-percent annual chance event were used as the starting elevations for these computations. Wave heights were calculated to the nearest 0.1 foot, and wave elevations were determined at whole-foot increments along the transects. The location of the 3-foot breaking wave for determining the terminus of the Zone VE (area with velocity wave action) was computed at each transect. Along the open coast, the Zone VE designation applies to all areas seaward of the landward toe of the primary frontal dune system. The primary frontal due is defined as the point where the ground profile changes from relatively steep to relatively mild.

Dune erosion was taken into account along the Delaware Bay and Atlantic Ocean coastline. A review of the geology and shoreline type in Sussex County was made to determine the applicability of standard erosion methods, and FEMA's standard erosion methodology for coastal areas having primary frontal dunes, referred to as the "540 rule," was used (FEMA, 2007a). This methodology first evaluates the dune's cross-sectional profile to determine whether the dune has a reservoir of material that is greater or less than 540 square feet. If the reservoir is greater than 540 square feet, the "retreat" erosion method is employed and approximately 540 square feet of the dune is eroded using a standardized eroded profile, as specified in FEMA guidelines. If the reservoir is less than 540 square feet, the "remove" erosion method is employed where the dune is removed for subsequent analysis, again using a standard eroded profile. The storm surge study provided the return period stillwater elevations required for erosion analyses. Each cross-shore transect was analyzed for erosion, when applicable.

Wave height calculations used in this flood study are based on the methodologies described in the FEMA guidance for coastal mapping (FEMA, 2007a). Wave setup results in an increased water level at the shoreline due to the breaking of waves and transfer of momentum to the water column during hurricanes and severe storms. For the Sussex County study, wave setup was determined directly from the coupled wave and storm surge model. The total stillwater elevation (SWEL) with wave setup was then used for simulations of inland wave propagation conducted using FEMA's Wave Height Analysis for Flood Insurance Studies (WHAFIS) model Version 4.0 (FEMA, 2007b). WHAFIS is a one-dimensional model that was applied to each transect in the study area. The model uses the specified SWEL, the computed wave setup, and the starting wave conditions as input. Simulations of wave transformations were then conducted with WHAFIS taking into account the storm-induced erosion and overland features of each transect. Output from the model includes the combined SWEL and wave height along each cross-shore transect allowing for the establishment of BFEs and flood zones from the shoreline to points inland within the study area.

Wave runup is defined as the maximum vertical extent of wave uprush on a beach or structure. FEMA's 2007 Guidelines and Specifications require the 2-percent wave runup level be computed for the coastal feature being evaluated (cliff, coastal bluff, dune, or structure) (FEMA, 2007a). The 2-percent runup level is the highest 2-percent of wave runup affecting the shoreline during the 1-percent annual chance flood event. Each transect defined within the Region III study area was evaluated for the applicability of wave runup, and if necessary, the appropriate runup methodology was selected and applied to each transect. Runup elevations were then compared to WHAFIS results to determine the dominant process affecting BFEs and associated flood hazard levels. Based on wave runup rates, wave overtopping was computed following the FEMA 2007 Guidelines and Specifications.

Computed controlling wave heights at the shoreline range from 6.93 feet (NAVD 88) at the northern end of the county where the coastal surge is higher to 5.86 feet (NAVD 88) at the southern end where the coastal surge is lower. The corresponding wave elevation at the shoreline varies from 14.25 feet (NAVD 88) at the northern end to 11.72 feet (NAVD 88) at the southern end. Any dunes present along the coast serve to reduce wave height transmitted inland, but the large areas of low-lying marshes which are inundated by the tidal surge allow regeneration of the waves as they proceed inland. In general, the relatively shallow depth of water in the marshes along with the energy dissipating effects of vegetation allows only minor regeneration of the waves.

Figure 2, "Transect Location Map," illustrates the location of each transect. Along each transect, wave envelopes were computed considering the combined effects of changes in ground elevation, vegetation and physical features. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and engineering judgment to determine the aerial extent of flooding. The results of the calculations are accurate until local topography, vegetation, or cultural development within the community undergoes major changes. In Table 9, "Transect Data," the flood hazard zone and base flood elevations for each transect flooding source is provided, along with the 10-, 2-, 1-, and 0.2-percent annual chance stillwater elevations for the respective flooding source.

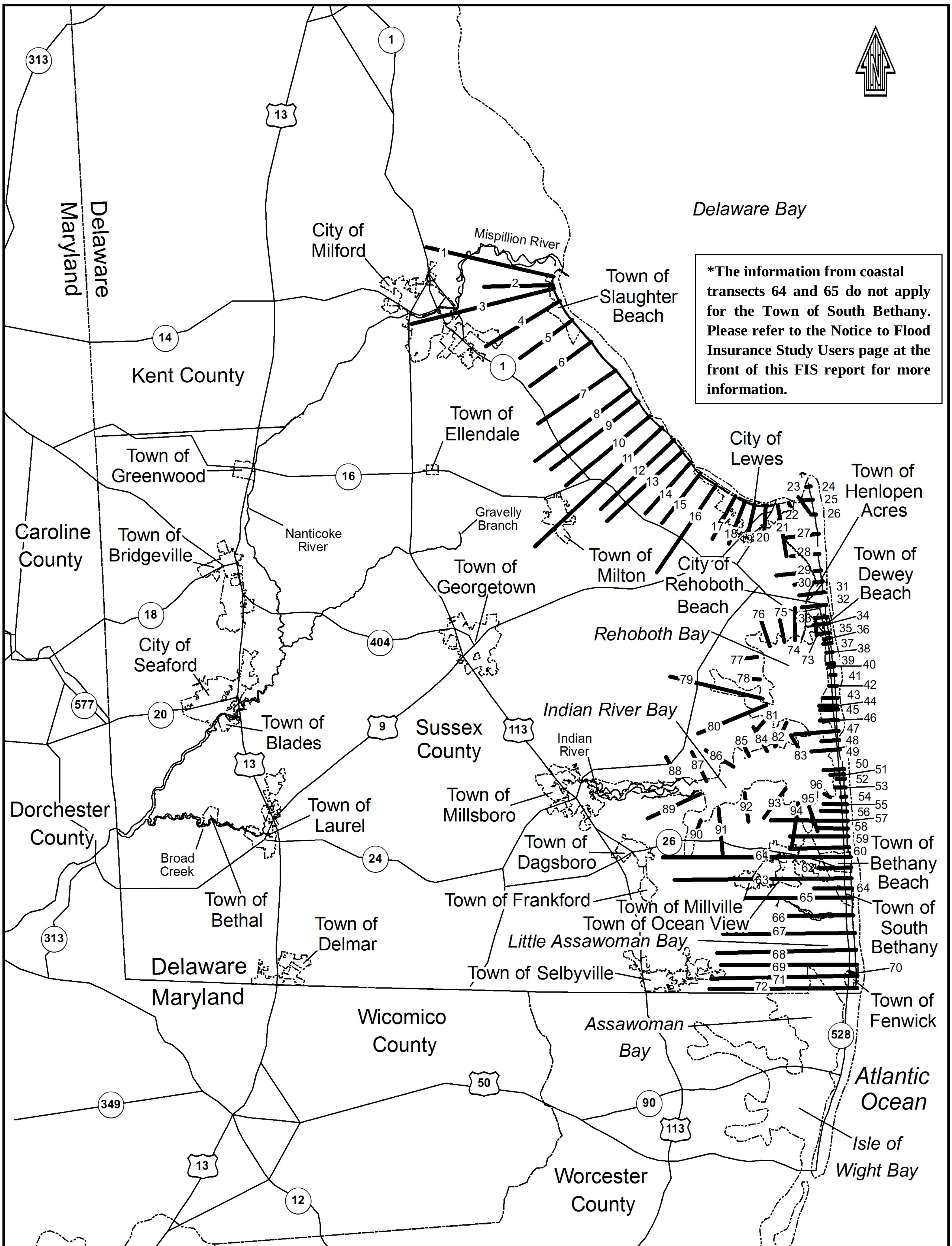

Figure 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DELAWARE AND INCORPORATED AREAS

Approximate Scale

0 2.5 5 7.5 10 Miles

TRANSECT LOCATION MAP

TABLE 9 – TRANSECT DATA

			Starting Wave Conditions for the 1-percent Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations* (ft NAVD88)			
Flood Source	Transect	Coordinates	Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Delaware Bay	1	N 38.938954 W 75.316005	5.56	7.12	7.1 7.1 - 7.6	8.6 8.6 - 8.9	9.4 9.3 - 9.5	11.1 10.9 - 11.5
Delaware Bay	2	N 38.933114 W 75.316551	5.77	7.06	7.2 7.1 - 7.5	8.7 8.6 – 9.0	9.4 9.3 - 9.6	11.1 11.1 - 11.5
Delaware Bay	3	N 38.930741 W 75.315759	6.02	7.06	7.2 7.1 - 7.5	8.7 8.6 - 8.9	9.4 9.2 - 9.6	11.1 11.0 - 11.6
Delaware Bay	4	N 38.922418 W 75.310541	6.90	6.87	7.1 7.1 - 7.5	8.7 8.6 – 9.0	9.4 9.3 - 9.7	11.0 11 - 11.5
Delaware Bay	5	N 38.909274 W 75.299594	8.97	6.97	7.1 7 - 7.5	8.6 8.6 – 9.0	9.4 9.3 - 9.7	11.2 11.2 - 11.5
Delaware Bay	6	N 38.894365 W 75.282747	8.47	7.27	7.0 7 - 7.2	8.6 8.6 - 8.9	9.3 9.3 - 9.6	11.2 11.2 - 11.4
Delaware Bay	7	N 38.874893 W 75.260991	7.75	7.47	6.9 6.9 - 7.2	8.5 8.4 - 8.8	9.2 9.1 - 9.4	11.0 10.8 - 11.2
Delaware Bay	8	N 38.862219 W 75.248101	6.46	7.50	6.7 6.2 - 6.7	8.2 7.6 - 8.2	8.9 8.0 - 8.9	10.6 9.0 - 10.6
Delaware Bay	9	N 38.853764 W 75.240798	7.41	7.38	6.8 6.2 - 6.8	8.3 7.6 - 8.3	9.0 8.0 - 9.0	10.8 9.0 - 10.8
Delaware Bay	10	N 38.843658 W 75.230995	8.14	7.33	6.7 6.2 - 6.7	8.2 7.6 - 8.3	8.9 8.0 - 9.0	10.7 9.0 - 10.8
Delaware Bay	11	N 38.835876 W 75.219816	8.28	7.55	6.7 6.2 - 6.7	8.2 7.6 - 8.2	8.9 8.1 - 8.9	10.7 9.1 - 10.7
Delaware Bay	12	N 38.827221 W 75.209809	8.26	7.54	6.7 6.1 - 6.7	8.2 7.6 - 8.2	8.9 8.0 - 8.9	10.6 9.1 - 10.6
Delaware Bay	13	N 38.819675 W 75.201779	9.38	7.42	6.7 6.1 - 6.7	8.1 7.5 - 8.2	8.8 8 - 8.9	10.6 9.1 - 10.6

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

TABLE 9 – TRANSECT DATA (continued)

Flood Source	Transect	Coordinates	Starting Wave Conditions for the 1-percent Annual Chance: Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	Starting Stillwater Elevations (ft NAVD88) / Range of Stillwater Elevations* (ft NAVD88): 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Delaware Bay	14	N 38.812117 W 75.194389	9.26	7.44	6.7 6.1 - 6.7	8.1 7.5 - 8.2	8.8 8 - 8.8	10.5 9.1 - 10.5
Delaware Bay	15	N 38.804226 W 75.186594	9.44	7.31	6.7 6.1 - 6.7	8.1 7.6 - 8.1	8.7 8 - 8.7	10.4 9.2 - 10.4
Delaware Bay	16	N 38.796426 W 75.172115	9.58	6.97	6.5 6 - 6.5	7.9 7.4 - 7.9	8.5 7.8 - 8.5	10.2 9.0 - 10.2
Delaware Bay	17	N 38.788799 W 75.155149	8.66	6.37	6.4 5.5 - 6.4	7.7 6.9 - 7.7	8.3 7.3 - 8.3	10.0 8.6 – 10.0
Delaware Bay	18	N 38.785220 W 75.146751	7.82	5.90	6.3 5.1 - 6.3	7.6 6.2 - 7.6	8.2 6.7 - 8.2	9.9 7.9 - 9.9
Delaware Bay	19	N 38.783075 W 75.138318	6.81	5.49	6.2 4.7 - 6.3	7.6 5.6 - 7.6	8.2 5.9 - 8.2	9.8 7.4 - 9.8
Delaware Bay	20	N 38.782318 W 75.128199	5.73	5.15	6.2 4.2 - 6.2	7.5 4.7 - 7.5	8.1 4.9 - 8.1	9.7 6 - 9.7
Delaware Bay	21	N 38.782389 W 75.117698	4.41	4.02	6.1 3.9 - 6.1	7.4 4.5 - 7.4	8.0 4.6 – 8.0	9.6 5.4 - 9.6
Delaware Bay	22	N 38.784340 W 75.108092	3.27	3.09	6.0	7.3	7.9 7.4 - 7.9	9.5 9.4 - 9.5
Delaware Bay	23	N 38.788062 W 75.099347	2.37	2.77	6.0 5.9 - 6.1	7.2 7.2 - 7.3	7.8 7.8 - 8	9.4 9.4 - 9.6
Atlantic Ocean	24	N 38.795381 W 75.088536	15.61	8.24	5.8 5.8 - 5.9	7.1 7.1 - 7.2	7.7 7.7 - 7.8	9.3 9.3 - 9.4
Atlantic Ocean	25	N 38.786388 W 75.086456	11.62	12.49	5.9 5.9 - 6.0	7.2 7.2 - 7.3	7.9 7.8 - 7.9	9.4 9.4 - 9.6

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

TABLE 9 – TRANSECT DATA (continued)

Flood Source	Transect	Coordinates	Starting Wave Conditions for the 1-percent Annual Chance: Significant Wave Height H_s (ft)	Starting Wave Conditions for the 1-percent Annual Chance: Peak Wave Period T_p (sec)	Starting Stillwater Elevations (ft NAVD88) / Range of Stillwater Elevations* (ft NAVD88): 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Atlantic Ocean	26	N 38.776292 W 75.083725	12.19	11.12	5.9	7.2 7.2 - 7.3	7.9	9.5 9.5 - 9.6
Atlantic Ocean	27	N 38.763044 W 75.081324	11.71	12.55	6.1 4.0 - 6.4	7.5 4.5 - 7.8	8.1 4.6 - 8.3	9.8 5.4 - 10.0
Atlantic Ocean	28	N 38.749332 W 75.081068	12.68	13.06	6.2 3.8 - 6.3	7.6 4.4 - 7.7	8.3 4.6 - 8.3	9.9 5.6 - 9.9
Atlantic Ocean	29	N 38.737959 W 75.079249	14.42	12.76	6.0 3.8 - 6.0	7.4 4.4 - 7.5	8.1 4.6 - 8.2	9.7 5.5 - 9.8
Atlantic Ocean	30	N 38.730422 W 75.078061	15.37	12.52	6.0 3.8 - 6.0	7.4 4.4 - 7.5	8.0 4.6 - 8.1	9.7 5.4 - 9.8
Atlantic Ocean	31	N 38.723127 W 75.076746	15.97	12.52	6.1 3.8 - 6.1	7.5 4.4 - 7.6	8.2 4.6 - 8.2	9.8 5.2 - 9.9
Atlantic Ocean	32	N 38.714515 W 75.075151	16.49	12.75	6.1 3.9 - 6.3	7.5 4.3 - 7.6	8.1 4.5 - 8.2	9.7 5.1 - 9.9
Atlantic Ocean	33	N 38.706419 W 75.074158	16.62	13.10	6.1 4.0 - 6.3	7.5 4.5 - 7.7	8.1 4.7 - 8.4	9.7 5.6 - 10
Atlantic Ocean	34	N 38.701810 W 75.073468	16.89	12.49	6 4.0 - 6.2	7.5 4.5 - 7.6	8.1 4.7 - 8.1	9.7 5.6 - 9.9
Atlantic Ocean	35	N 38.695636 W 75.072264	16.94	12.53	5.9 3.9 - 6.0	7.4 4.6 - 7.5	8.0 4.9 - 8.0	9.7 5.7 - 9.8
Indian River Bay	36	N 38.690786 W 75.076847	2.77	3.60	3.9 3.9 - 4.1	4.6 4.6 - 7.5	4.9 4.9 - 8.0	5.7 5.7 - 9.7
Atlantic Ocean	37	N 38.688401 W 75.070741	17.04	12.60	5.9 3.9 - 5.9	7.3 4.6 - 7.4	7.9 4.9 - 8	9.6 5.5 - 9.7

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

TABLE 9 – TRANSECT DATA (continued)

			Starting Wave Conditions for the 1-percent Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations* (ft NAVD88)			
Flood Source	Transect	Coordinates	Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Atlantic Ocean	38	N 38.682166 W 75.069399	16.67	12.80	6.1 3.9 - 6.2	7.5 4.6 - 7.6	8.1 4.9 - 8.2	9.7 5.5 - 9.8
Atlantic Ocean	39	N 38.674456 W 75.068224	16.11	12.87	6.1 3.9 - 6.2	7.5 4.6 - 7.6	8.1 4.9 - 8.2	9.7 5.6 - 9.7
Indian River Bay	40	N 38.671883 W 75.073050	2.90	3.36	4 4 - 5.3	4.6 4.6 - 7.7	4.9 4.9 - 8.3	5.6 5.6 - 9.8
Atlantic Ocean	41	N 38.666558 W 75.066949	15.48	13.03	6.3 4 - 6.4	7.6 4.7 - 7.8	8.2 5 - 8.4	9.8 5.6 - 10
Atlantic Ocean	42	N 38.659186 W 75.065768	15.17	12.97	6.0 4 - 6.1	7.4 4.6 - 7.5	8.0 4.9 - 8.2	9.6 5.5 - 9.7
Atlantic Ocean	43	N 38.650852 W 75.065426	14.00	13.46	6.1 4 - 6.2	7.4 4.6 - 7.5	8.0 4.9 - 8.2	9.7 5.3 - 9.8
Indian River Bay	44	N 38.645637 W 75.081719	2.41	3.07	3.9 3.9 - 6.3	4.7 4.6 - 7.6	4.8 4.8 - 8.2	5.2 5.2 - 9.8
Atlantic Ocean	45	N 38.643142 W 75.064912	15.88	13.26	6.2 3.9 - 6.4	7.5 4.6 - 7.7	8.1 4.8 - 8.3	9.7 5.2 - 9.9
Atlantic Ocean	46	N 38.635787 W 75.064953	15.45	13.26	6.1 4 - 6.3	7.5 4.7 - 7.6	8.1 4.8 - 8.4	9.7 5.1 - 9.8
Atlantic Ocean	47	N 38.628380 W 75.064607	16.55	13.22	6.0 4.1 - 6.1	7.3 4.7 - 7.5	7.9 4.8 - 8.1	9.5 5.1 - 9.7
Atlantic Ocean	48	N 38.622185 W 75.063881	16.39	13.29	6.2 4.2 - 6.5	7.5 4.8 - 7.8	8.1 4.9 - 8.3	9.7 5.2 - 9.9
Atlantic Ocean	49	N 38.615752 W 75.063311	16.12	13.52	6.2 4.3 - 6.3	7.5 4.8 - 7.6	8.1 4.9 - 8.2	9.6 5.4 - 9.7

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

TABLE 9 – TRANSECT DATA (continued)

			Starting Wave Conditions for the 1-percent Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations* (ft NAVD88)			
Flood Source	Transect	Coordinates	Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Atlantic Ocean	50	N 38.602314 W 75.059736	14.46	13.52	6.2 4.6 - 6.4	7.4 5.3 - 7.5	7.9 5.5 - 8	9.5 6.0 - 9.6
Indian River Bay	51	N 38.598314 W 75.072179	2.60	2.98	4.7 4.7 - 5.2	5.3 5.3 - 7.1	5.5 5.5 - 7.7	6.1 6.1 - 9.3
Atlantic Ocean	52	N 38.595662 W 75.058917	16.91	13.44	6.0 4.7 - 6	7.2 5.3 - 7.3	7.8 5.5 - 7.9	9.4 6.2 - 9.5
Atlantic Ocean	53	N 38.589792 W 75.058482	15.93	13.51	6.0 4.8 - 6	7.2 5.4 - 7.3	7.8 5.6 - 7.9	9.3 6.3 - 9.4
Atlantic Ocean	54	N 38.583539 W 75.057991	15.09	13.03	6.0 4.9 - 6	7.2 5.5 - 7.3	7.8 5.7 - 7.9	9.3 6.4 - 9.3
Atlantic Ocean	55	N 38.578265 W 75.057317	14.45	13.60	6.1 4.8 - 6.1	7.3 5.6 - 7.3	7.9 5.8 - 7.9	9.3 6.4 - 9.3
Atlantic Ocean	56	N 38.573341 W 75.057057	13.92	13.26	6.4 4.9 - 6.4	7.5 5.6 - 7.6	8.1 5.8 - 8.1	9.4 6.4 - 9.4
Atlantic Ocean	57	N 38.567103 W 75.056743	12.92	13.82	6.4 4.9 - 6.5	7.5 5.7 - 7.6	8.1 5.9 - 8.2	9.5 6.6 - 9.6
Atlantic Ocean	58	N 38.561779 W 75.056547	13.44	13.04	6.3 5 - 6.4	7.4 5.7 - 7.5	7.9 5.9 - 8.1	9.3 6.6 - 9.5
Atlantic Ocean	59	N 38.556387 W 75.056175	12.85	13.19	6.3 4.9 - 6.4	7.5 5.7 - 7.6	8.0 5.9 - 8.1	9.4 6.6 - 9.6
Atlantic Ocean	60	N 38.548985 W 75.055538	16.07	12.83	6.5 5 - 6.5	7.6 5.7 - 7.6	8.1 5.9 - 8.1	9.4 6.6 - 9.4
Atlantic Ocean	61	N 38.542205 W 75.054150	16.85	12.91	6.5 5 - 6.6	7.6 5.7 - 7.7	8.1 5.9 - 8.2	9.6 6.6 - 9.7

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

TABLE 9 – TRANSECT DATA (continued)

			Starting Wave Conditions for the 1-percent Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations* (ft NAVD88)			
Flood Source	Transect	Coordinates	Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Atlantic Ocean	62	N 38.535156 W 75.053755	17.55	12.89	6.7 3.7 - 6.7	7.8 5.7 - 7.8	8.3 5.9 - 8.3	9.5 6.6 - 9.5
Atlantic Ocean	63	N 38.527706 W 75.053455	17.77	12.87	6.8 3.5 - 6.8	7.8 4.7 - 7.9	8.3 5 - 8.3	9.5 5.9 - 9.5
Atlantic Ocean	64	N 38.520867 W 75.053021	17.95**	13.06**	6.7** 3.4 - 6.7**	7.7** 4.6 - 7.7**	8.2** 4.9 - 8.2**	9.4** 5.8 - 9.4**
Atlantic Ocean	65	N 38.514648 W 75.052743	17.65**	12.58**	6.6** 2.9 - 6.6**	7.6** 3.8 - 7.6**	8.1** 4 –8.1**	9.2** 4.8 - 9.2**
Atlantic Ocean	66	N 38.502690 W 75.052046	17.07	12.85	6.3 2.9 - 6.3	7.2 3.5 - 7.2	7.7 3.6 - 7.7	9.0 4.9 - 9
Atlantic Ocean	67	N 38.490619 W 75.050831	17.09	12.76	6.3 2.8 - 6.3	7.3 3.5 - 7.3	7.8 3.6 - 7.8	9.1 4.7 - 9.1
Atlantic Ocean	68	N 38.478972 W 75.049712	16.71	12.81	6.2 2.8 - 6.2	7.2 3.5 - 7.2	7.6 3.5 - 7.7	8.9 4.6 - 8.9
Atlantic Ocean	69	N 38.468763 W 75.049094	16.49	13.09	5.6 2.7 - 5.6	6.5 3.5 - 6.5	6.9 3.6 - 6.9	8.5 4.4 - 8.5
Little Assawoman Bay	70	N 38.463709 W 75.055188	1.96	2.56	2.7	4.2 4.2 - 4.4	4.7 4.7 - 4.8	5.4 5.4 - 5.7
Atlantic Ocean	71	N 38.461349 W 75.048708	16.46	13.20	5.7 2.7 - 5.7	6.6 3.6 - 6.6	7.1 3.8 - 7.1	8.7 4.4 - 8.7
Atlantic Ocean	72	N 38.452868 W 75.048976	16.14	13.02	6.3 2.7 - 6.3	7.2 3.6 - 7.2	7.6 3.8 - 7.6	8.9 4.7 - 8.9
Rehoboth Bay	73	N 38.693986 W 75.083677	3.00	3.71	3.9	4.6	4.9	5.7 5.6 - 5.8

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.
** This information does not apply for the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

TABLE 9 – TRANSECT DATA (continued)

Flood Source	Transect	Coordinates	Starting Wave Conditions for the 1-percent Annual Chance: Significant Wave Height H_s (ft)	Starting Wave Conditions for the 1-percent Annual Chance: Peak Wave Period T_p (sec)	Starting Stillwater Elevations (ft NAVD88) / Range of Stillwater Elevations* (ft NAVD88): 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Rehoboth Bay	74	N 38.690542 W 75.102928	3.37	3.67	4.0	4.6 4.6 - 4.7	4.8 4.8 - 4.9	5.3 5.3 – 6.0
Rehoboth Bay	75	N 38.689534 W 75.112358	3.51	3.77	4.1	4.7 4.7 - 4.8	4.9 4.9 - 5.1	5.3 5.3 - 6.3
Rehoboth Bay	76	N 38.686543 W 75.125063	3.82	3.88	4.2 4.1 - 4.2	4.7 4.7 - 4.9	4.9 4.9 - 5.1	5.3 5.2 - 6.7
Rehoboth Bay	77	N 38.678893 W 75.136516	3.53	3.74	4.2 4.2 - 4.4	4.8	4.9	5.3 5.2 - 5.5
Rehoboth Bay	78	N 38.663807 W 75.133937	3.30	3.73	4.3	4.8	4.9	5.2 5.1 - 5.2
Rehoboth Bay	79	N 38.650559 W 75.131705	3.09	3.52	4.3 4.3 - 4.6	4.8 4.8 - 5	4.9 4.9 - 5.1	5.1 5.0 - 6.0
Rehoboth Bay	80	N 38.646301 W 75.128355	2.98	3.44	4.2 4.2 - 4.4	4.8 4.8 - 5.1	4.9 4.9 - 5.1	5.1 5.1 - 5.5
Rehoboth Bay	81	N 38.635146 W 75.130661	2.76	3.39	4.2 4.2 - 4.3	4.9 4.9 - 5.1	4.9 4.9 - 5.1	5.2 5.2 - 5.4
Rehoboth Bay	82	N 38.634107 W 75.110605	2.66	3.28	4.1 4.1 - 4.7	4.8 4.8 - 5.4	4.9 4.9 - 5.6	5.1 5.1 -6.0
Indian River Bay	83	N 38.617320 W 75.100560	2.59	3.18	4.5 4.1 - 4.5	5.2 4.8 - 5.2	5.4 4.9 - 5.4	5.8 5.2 - 5.8
Indian River Bay	84	N 38.614679 W 75.127908	2.93	3.41	4.8 4.4 - 4.8	5.6 5 - 5.6	5.7 5.1 - 5.7	6.2 5.4 - 6.2
Indian River Bay	85	N 38.611468 W 75.143805	3.55	3.72	4.9	5.8 5.7 - 5.8	5.9	6.4

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

TABLE 9 – TRANSECT DATA (continued)

Flood Source	Transect	Coordinates	Starting Wave Conditions for the 1-percent Annual Chance: Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	Starting Stillwater Elevations (ft NAVD88) / Range of Stillwater Elevations* (ft NAVD88): 10-percent Annual Chance	2-percent Annual Chance	1-percent Annual Chance	0.2-percent Annual Chance
Indian River Bay	86	N 38.604192 W 75.157525	3.76	3.91	5.1	6.0	6.2	6.6 6.6 - 6.7
Indian River Bay	87	N 38.594391 W 75.181275	3.84	3.95	5.4 5.3 - 5.4	6.3	6.5 6.4 - 6.5	7.0
Indian River	88	N 38.595723 W 75.206240	3.09	3.76	5.5	6.5	6.7	7.2
Indian River Bay	89	N 38.585737 W 75.186754	3.84	3.95	5.5 5.5 - 5.6	6.4 6.4 - 6.6	6.6 6.6 - 6.8	7.2 7.2 - 7.5
Indian River Bay	90	N 38.567773 W 75.186634	3.46	3.96	5.7	6.7	6.9	7.5 7.5 - 7.6
Indian River Bay	91	N 38.575350 W 75.170689	3.91	4.12	5.5 5.5 - 5.6	6.4 6.4 - 6.6	6.6 6.6 - 6.8	7.2 7.2 - 7.4
Indian River Bay	92	N 38.586046 W 75.147767	3.92	3.94	5.2 5.2 - 5.4	6.2 6.2 - 6.4	6.4 6.4 - 6.6	6.9 6.9 - 7.3
Indian River Bay	93	N 38.589050 W 75.111619	3.25	3.51	4.9 4.9 - 5	5.7 5.7 - 5.9	5.9 5.9 - 6.1	6.5 6.5 - 6.7
Indian River Bay	94	N 38.579343 W 75.100097	3.15	3.60	4.9 4.9 - 5	5.7 5.7 -6.0	6.0 6 - 6.3	6.6 6.6 - 6.9
Indian River Bay	95	N 38.576413 W 75.090731	2.96	3.55	4.9	5.7 5.7 - 5.9	6.0 6 - 6.1	6.6 6.6 - 6.8
Indian River Bay	96	N 38.585566 W 75.077404	2.86	3.31	4.8	5.6	5.8 5.7 - 5.8	6.4

*For transects with a constant stillwater elevation, only one number is provided to represent both the starting value and the range.

Areas of coastline subject to significant wave attack are referred to as coastal high hazard zones. The USACE has established the 3-foot breaking wave as the criterion for identifying the limit of coastal high hazard zones. The 3-foot wave has been determined to be the minimum size wave capable of causing major damage to conventional wood frame of brick veneer structures. The one exception to the 3-foot wave criteria is where a primary frontal dune exists. The limit of the coastal high hazard area then becomes the landward toe of the primary frontal dune or where a 3-foot or greater breaking wave exists, whichever is most landward. The coastal high hazard zone is depicted on the FIRMs as Zone VE, where the delineated flood hazard includes wave heights equal to or greater than three feet. Zone AE is depicted on the FIRMs where the delineated flood hazard includes wave heights less than three feet. A depiction of how the Zones VE and AE are mapped is shown in Figure 4.

Post-storm field visits and laboratory tests have confirmed that wave heights as small as 1.5 feet can cause significant damage to structures when constructed without consideration to the coastal hazards. Additional flood hazards associated with coastal waves include floating debris, high velocity flow, erosion, and scour which can cause damage to Zone AE-type construction in these coastal areas. To help community officials and property owners recognize this increased potential for damage due to wave action in the AE zone, FEMA issued guidance in December 2008 on identifying and mapping the 1.5-foot wave height line, referred to as the Limit of Moderate Wave Action (LiMWA). While FEMA does not impose floodplain management requirements based on the LiMWA, the LiMWA is provided to help communicate the higher risk that exists in that area. Consequently, it is important to be aware of the area between this inland limit and the Zone VE boundary as it still poses a high risk, though not as high of a risk as Zone VE, see Figure 3 "Transect Schematic".

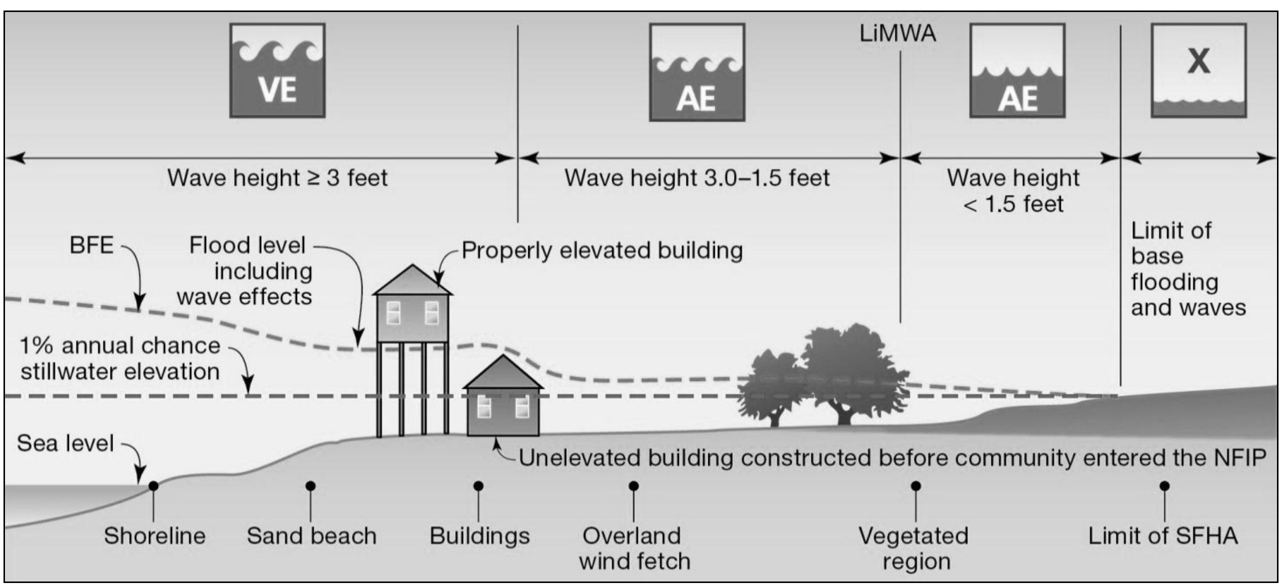

Figure 3 – Transect Schematic

3.4 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum 1929 (NGVD29). With the completion of NAVD88, many FIS reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

For this countywide FIS, all flood elevations shown in the FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community, must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced in NGVD29. This may result in differences in base flood elevations across corporate limits between communities.

As noted above, the elevations shown in the FIS report and on the FIRM for Sussex County are referenced to NAVD88. Ground, structure and flood elevations may be compared and/or referenced to NGVD29 by applying a standard conversion factor. The conversion factor from NGVD29 to NAVD88 for Sussex County is -0.80 feet.

NGVD29 – 0.80 = NAVD88

The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in this FIS to NGVD29 should apply the conversion factor (+0.80 foot) to elevations shown on the Flood Profiles and supporting data tables in this FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information about conversion between NGVD29 and NAVD88, see the FEMA publication entitled, Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the National Geodetic Survey at www.ngs.noaa.gov, or at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent annual chance flood elevations; delineations of the 1-percent annual-chance and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance flood is employed to indicate additional areas of flood risk in the community. For the March 16, 2015, countywide FIS revision, ponding areas that are studied in detail and the limited detailed study riverine areas, the 1-percent annual chance floodplain boundaries have been delineated using Sussex County 2 foot contours derived from LiDAR data collected in 2002-2005 (DEG, 2010). For each coastal flooding source studied in detail, the 1-percent annual chance and 0.2-percent annual chance floodplain boundaries have been delineated using the Sussex County 2 foot contours. Between transects, the boundaries were interpolated using the Sussex County 2 foot contours.

Please note that FEMA has not included any new flood hazard data within the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

For the March 16, 2015, countywide FIS revision, for the areas studied by approximate methods, the 1-percent annual chance floodplain boundaries were delineated using the Sussex County 2 foot contours derived from LiDAR data collected in 2002-2005 (DEG, 2010).

For this countywide FIS revision, 1% annual chance riverine flood boundaries were delineated using flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic data acquired using airborne Light Detection and Ranging (LiDAR). The computer generated 1-percent annual chance floodplain boundaries were manually reviewed for accuracy and minor adjustments were made in ArcMap environment. The terrain source used to delineate the floodplain boundaries was 2007 LiDAR data obtained from NOAA's Digital Coast (http://coast.noaa.gov/digitalcoast/).

For the areas studied by approximate methods, outside of the March 16, 2015, and this countywide FIS revision, the 1-percent annual chance floodplain boundaries were delineated using topographic maps and the previously printed FIS for the unincorporated areas of Sussex County (USGS, 1984, et cetera and FEMA, 1992).

The 1- and 0.2-percent annual chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent annual chance floodplain boundaries correspond to the boundaries of the areas of special flood hazard (Zones A, AE, AO, and VE), and the 0.2-percent annual chance floodplain boundaries correspond to the boundaries of areas of moderate flood hazard. In cases where the 1- and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundaries have been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent annual chance floodplain boundaries are shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional studies.

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 11). The computed floodway is shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

No floodway was developed for Shoals Branch as most of the development is clustered around the ponds where the floodway would be at the water edge.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, “Without Floodway” elevations presented in Table 11, "Floodway Data Table" for certain downstream cross sections of Betts Pond, Broad Creek, the Broadkill River, Church Branch, Clear Brook, Deep Creek, Georgetown Road Branch, Herring Creek, Herring Run, Hopkins Prong, the Indian River, Ingram Branch, Iron Branch, Little Creek, Love Creek, Martin Branch, the Mispillion River, Mullet Run, the Nanticoke River, Pemberton Branch, Pepper Creek, Pepper Creek Fork 1, Pepper Creek Fork 3, Presbyterian Branch, Rossakatum Branch, Round Pole Branch, Sowbridge Branch, Whartons Branch, White Creek, and White Creek Ditch are lower than the regulatory flood elevations in that area, which must take into account the 1-percent annual chance flooding due to backwater from other sources.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities is provided in Table 10, “Floodway Data Table.” In order to reduce the risk of property damage in areas where the stream velocities are high, it may be advisable to restrict development in areas outside the floodway.

The area between the floodway and 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4, “Floodway Schematic”.

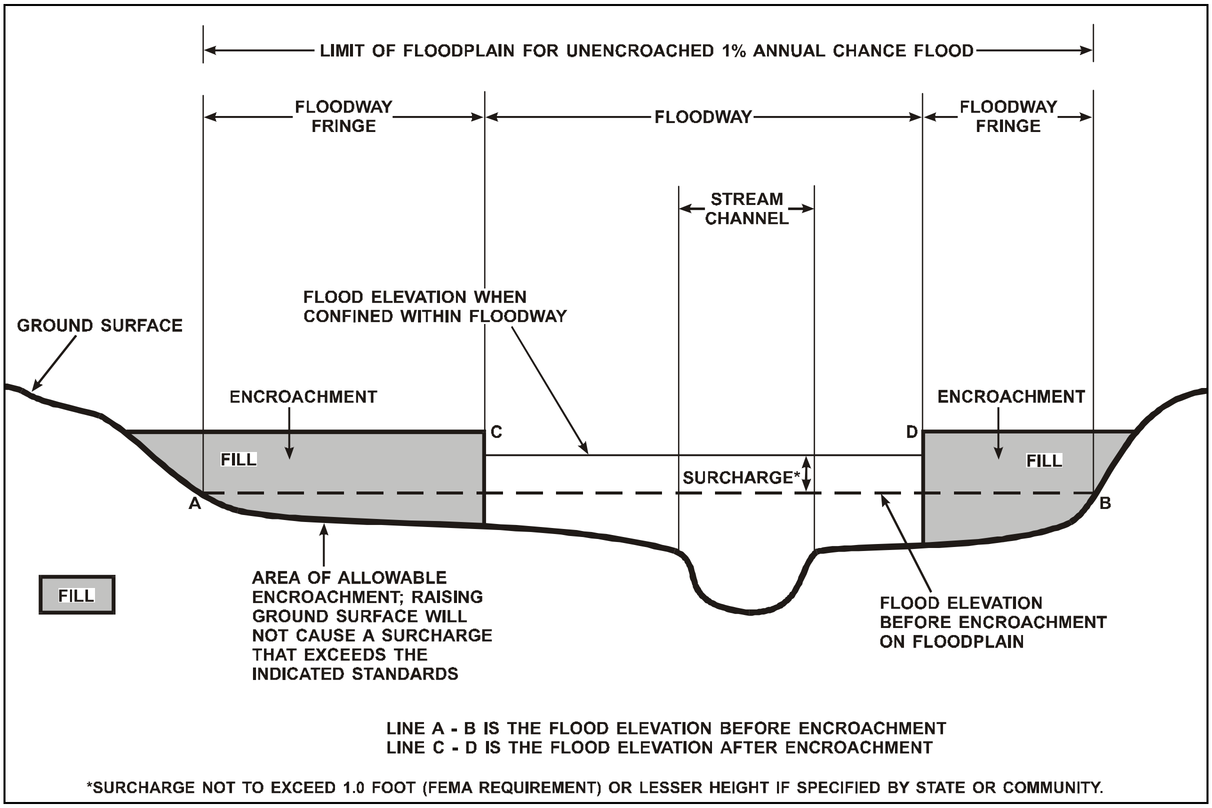

Figure 4 – Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Bark Pond								
A	640	89	347	0.6	9.1	9.1	10.1	1.0
B	1,410	62	249	0.8	9.2	9.2	10.2	1.0
C	2,267	20	66	3.2	9.6	9.6	10.2	0.6
D	2,381	39	118	1.8	10.9	10.9	11.2	0.3
E	2,852	100	278	0.8	11.2	11.2	11.6	0.4
F	3,001	140	380	0.6	11.6	11.6	12.2	0.6
Betts Pond								
A	180	265	888	0.4	8.3	5.2[3]	6.2	1.0
B	1,233	44	180	2.0	8.3	5.3[3]	6.2	0.9
C	1,331	43	133	2.7	8.3	5.3[3]	6.2	0.9
D	1,985	20	69	5.2	8.3	6.5[3]	7.2	0.7
E	2,076	270[2]	171	2.1	14.5	14.5	15.3	0.8
F	3,260	505	2,100	0.2	14.5	14.5	15.5	1.0
G	4,563	313	1,263	0.3	14.5	14.5	15.5	1.0
H-S*	*	*	*	*	*	*	*	*

[1]Feet above confluence with Indian River (Millsboro Pond)

[2]Floodway width has been adjusted to conform to updated topographic data

[3]Elevation computed without consideration of backwater effects from Indian River

*Floodway data not computed

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

BARK POND – BETTS POND

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Bridgeville Branch								
A	5,560[1]	50	316	2.3	30.5	30.5	31.3	0.8
B	6,680[1]	60	296	2.4	31.0	31.0	31.8	0.8
C	7,709[1]	33	211	3.4	31.8	31.8	32.5	0.7
D	7,842[1]	44	213	3.4	32.5	32.5	33.4	0.9
E	8,520[1]	44	211	3.4	33.5	33.5	34.0	0.5
F	9,383[1]	65	312	2.3	34.2	34.2	35.0	0.8
G	9,554[1]	40	232	3.1	36.6	36.6	36.6	0.0
H	10,350[1]	40	252	2.9	36.7	36.7	37.5	0.8
Broad Creek								
A-Q*	*	*	*	*	*	*	*	*
R	42,733[1]	160[3]	1,494	1.8	6.0	4.9[4]	5.8	0.9
S	46,316[1]	260[3]	3,217	0.8	11.2	11.2	11.2	0.0
Broadkill River								
A	17,500[2]	300	2,671	0.5	8.5	6.3[5]	7.3	1.0
B	21,440[2]	300	3,216	0.4	8.5	6.3[5]	7.3	1.0
C	24,270[2]	200	2,265	0.5	8.5	6.3[5]	7.3	1.0
D	25,101[2]	200	1,080	1.1	8.5	6.3[5]	7.3	1.0
E	25,275[2]	160	844	1.4	8.5	6.3[5]	7.3	1.0
F	25,890[2]	480[3]	1,535	0.8	8.5	7.0	7.9	0.9

[1]Feet above confluence with Nanticoke River

[2]Feet above State Route 1

[3]Floodway width has been adjusted to conform to updated topographic data

[4]Elevation computed without consideration of backwater effects from Chesapeake Bay

[5]Elevation computed without consideration of backwater effects from Delaware Bay

*Floodway data superseded by updated coastal analysis

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

BRIDGEVILLE BRANCH – BROAD CREEK – BROADKILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Buntings Branch								
A	720	35	235	5.6	11.0	11.0	12.0	1.0
B	1,656	25	158	8.3	14.0	14.0	14.7	0.7
C	1,768	90	613	2.1	17.3	17.3	17.3	0.0
D	2,680	75	477	2.7	17.9	17.9	18.1	0.2
E	4,440	40	270	4.8	19.4	19.4	20.1	0.7
F	5,373	40	278	4.7	21.0	21.0	21.5	0.5
G	5,496	64	518	2.5	23.5	23.5	23.9	0.4
Sandy Branch								
H	6,400	75	454	1.7	24.0	24.0	24.5	0.5
I	7,840	35	263	2.8	24.6	24.6	25.3	0.7
J	8,000	15	159	5.0	26.7	26.7	27.3	0.6
K	8,480	30	326	2.3	30.0	30.0	30.7	0.7
L	9,716	61	323	2.3	34.0	34.0	34.8	0.8
M	9,872	110	661	1.1	34.0	34.0	34.9	0.9
N	11,384	35	234	3.2	34.7	34.7	35.6	0.9
O	11,668	56	508	1.5	36.5	36.5	37.3	0.8
P	12,927	35	294	2.6	36.6	36.6	37.4	0.8
Q	13,086	46	311	2.4	37.3	37.3	37.9	0.6
R	13,123	37	265	2.8	37.3	37.3	37.9	0.6
S	13,279	75	433	1.7	37.4	37.4	38.3	0.9

[1]Feet above Delaware State boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

BUNTINGS BRANCH – SANDY BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Cart Branch								
A	1,960	59	486	2.2	43.8	43.8	44.0	0.2
B	2,410	100	736	1.5	44.0	44.0	44.4	0.4
C	2,542	100	822	1.3	44.0	44.0	44.5	0.5
D	4,420	140	743	1.5	44.0	44.0	44.7	0.7
E	6,603	160	545	2.0	44.4	44.4	45.4	1.0
F	6,741	200	625	1.7	44.8	44.8	45.8	1.0
G	7,121	200	572	1.9	45.1	45.1	46.0	0.9
H	7,290	240	809	1.3	45.7	45.7	46.5	0.8
I	8,370	180	678	1.6	46.1	46.1	47.0	0.9
J	9,096	125	782	1.4	46.3	46.3	47.2	0.9
K	9,250	22	255	4.3	50.5	50.5	51.4	0.9

[1]Feet above confluence with Nanticoke River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

CART BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Cedar Creek								
A	4,122	280	1,599	0.2	15.0	15.0	15.1	0.1
B	6,090	326	1,867	0.2	15.0	15.0	15.1	0.1
C	7,670	128	592	0.5	15.0	15.0	15.1	0.1
D	9,428	227	1,456	0.2	20.3	20.3	20.3	0.0
E	9,554	163	804	0.4	20.3	20.3	20.3	0.0
F	10,790	250	1,269	0.2	20.3	20.3	20.3	0.0
G	12,510	300[2]	518	0.6	20.4	20.4	20.4	0.0
H	14,064	19	78	3.8	20.5	20.5	20.7	0.2
I	14,187	65	296	1.0	22.3	22.3	22.6	0.3
J	16,662	14	46	6.5	23.3	23.3	24.1	0.8
K	16,776	16	105	2.9	25.7	25.7	25.7	0.0
L	17,570	28	185	1.6	25.8	25.8	26.1	0.3
M	18,302	40	198	1.5	25.8	25.8	26.3	0.5
N	18,414	120	801	0.4	27.4	27.4	28.4	1.0
O	19,400	115	590	0.5	27.4	27.4	28.4	1.0
P	21,269	30	83	3.6	29.3	29.3	29.4	0.1
Q	21,376	127	527	0.3	29.8	29.8	29.9	0.1
R	23,414	200[2]	81	2.0	29.8	29.8	29.9	0.1
S	24,830	108	234	0.2	34.6	34.6	35.0	0.4
T	27,700	20	45	0.9	39.5	39.5	40.0	0.5

[1]Feet above State Route 30

[2]Floodway width has been adjusted to conform to updated topographic data

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Church Branch								
A	4,205	18	80	5.0	11.3	11.3	11.6	0.3
B	5,440	80	291	1.4	12.8	12.8	13.7	0.9
C	6,850	100	350	1.1	14.1	14.1	15.1	1.0
D	9,260	50	103	1.7	17.5	17.5	18.1	0.6
E	11,358	25	82	2.2	22.4	22.4	22.9	0.5
F	11,447	125	933	0.2	29.0	29.0	29.8	0.8
G	12,500	145	956	0.2	29.0	29.0	29.8	0.8
H	13,771	31	143	1.3	29.0	29.0	29.8	0.8
I	13,913	92	420	0.4	29.6	29.6	30.4	0.8
J	16,420	68	69	2.6	32.5	32.5	32.5	0.0
K	18,970	50	167	1.1	39.0	39.0	39.7	0.7
L	20,830	30	107	1.7	42.3	42.3	43.2	0.9
M	22,455	30	120	1.5	44.8	44.8	45.4	0.6
N	22,549	80	399	0.5	45.9	45.9	46.6	0.7
O	23,970	60	242	0.1	46.0	46.0	46.8	0.8
P	25,285	7	24	1.2	46.0	46.0	46.8	0.8
Q	25,397	20	69	0.4	47.6	47.6	47.9	0.3

[1]Feet above Fleatown Road

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

CHURCH BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Clear Brook								
A	600	140	913	1.0	6.0	1.7[2]	2.7	1.0
B	740	140	953	1.0	6.0	1.7[2]	2.7	1.0
C	1,115	142	877	1.1	6.0	1.7[2]	2.7	1.0
D	1,242	504	5,137	0.2	9.1	9.1	9.1	0.0
E	6,035	92	1,079	0.9	9.1	9.1	9.1	0.0
F	6,240	313	3,315	0.3	9.1	9.1	9.1	0.0
G	7,520	274	2,330	0.4	9.2	9.2	9.2	0.0
H	9,160	202	1,263	0.8	9.2	9.2	9.2	0.0
I	10,094	46	432	2.2	9.2	9.2	9.2	0.0
J	10,196	68	582	1.6	9.3	9.3	9.3	0.0
K	12,760	232	484	2.0	9.9	9.9	10.0	0.1
L	14,570	157	541	1.8	12.7	12.7	12.8	0.1
M	17,930	98	396	2.4	16.3	16.3	17.1	0.8
N	21,509	133	406	2.3	18.5	18.5	19.3	0.8
O	21,767	53	192	4.9	18.7	18.7	19.4	0.7
P	21,988	60	253	3.7	19.4	19.4	19.8	0.4
Q	22,096	61	307	3.1	20.0	20.0	20.4	0.4
R	22,272	68	352	2.7	21.3	21.3	21.4	0.1
S	22,352	450	4,488	0.1	30.8	30.8	31.8	1.0
T	25,770	211	2,225	0.2	30.8	30.8	31.8	1.0
U	28,006	135	1,166	0.5	30.8	30.8	31.8	1.0
V	28,108	63	582	0.9	30.8	30.8	31.8	1.0
W	29,453	60	269	2.0	30.8	30.8	31.8	1.0

[1]Feet above confluence with Nanticoke River

[2]Elevation computed without consideration of backwater effects from Chesapeake Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

CLEAR BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Deep Branch								
A	4,900[1]	19	83	9.9	13.0	13.0	14.0	1.0
B	4,981[1]	14	106	7.7	13.3	13.3	14.3	1.0
C	5,151[1]	125	922	0.9	17.1	17.1	18.1	1.0
D	5,301[1]	63	458	0.8	17.2	17.2	18.1	0.9
Deep Creek								
A-F*	*	*	*	*	*	*	*	*
Georgetown Road Branch								
A	165[2]	7	16	2.5	11.2	7.4[3]	8.4	1.0
B	909[2]	4	6	6.6	13.4	13.4	13.4	0.0
C	1,050[2]	12	45	0.9	18.6	18.6	18.6	0.0
D	1,710[2]	9	24	1.6	18.6	18.6	18.7	0.1
E	2,281[2]	9	12	3.4	20.8	20.8	21.0	0.2

[1]Feet above State Highway 14

[2]Feet above confluence with Broad Creek

[3]Elevation computed without consideration of backwater effects from Broad Creek

*Floodway data superseded by updated coastal analysis

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

DEEP BRANCH – DEEP CREEK –
GEORGETOWN ROAD BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Herring Creek								
A	400	1,111	4,470	0.1	6.2	0.2[3]	1.2	1.0
B	1,940	625	3,119	0.1	6.2	0.2[3]	1.2	1.0
C	3,820	513	2,262	0.1	6.2	0.2[3]	1.2	1.0
D	7,340	85	478	0.6	6.2	0.2[3]	1.2	1.0
E	8,859	24	52	5.2	6.2	3.0[3]	3.1	0.1
F	8,945	400[2]	807	0.3	8.5	8.5	8.5	0.0
G	9,810	546	3,311	0.1	8.5	8.5	8.5	0.0
Chapel Branch								
H	12,640	109	620	0.2	8.5	8.5	8.5	0.0
I	16,580	12	51	2.7	8.5	8.5	8.5	0.0
J	18,750	40	209	0.7	8.8	8.8	8.9	0.1

[1]Feet above Limit of Riverine Analysis (Limit of Riverine Analysis approximately 8,900 feet downstream of State Route 24)
[2]Floodway width has been adjusted to conform to updated topographic data
[3]Elevation computed without consideration of backwater effects from Rehoboth Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

HERRING CREEK – CHAPEL BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Herring Run								
A	867	165	450	2.3	9.1	6.6[2]	7.6	1.0
B	1,052	73	454	2.2	14.3	14.3	14.3	0.0
C	1,800	150	699	1.5	14.5	14.5	14.8	0.3
D	2,527	249	551	1.9	14.8	14.8	15.6	0.8
E	3,297	70	221	4.6	18.3	18.3	19.2	0.9
F	3,437	80	622	1.6	22.5	22.5	23.5	1.0
G	3,642	210	1,554	0.7	22.5	22.5	23.4	0.9
H	4,367	320	1,754	0.6	22.6	22.6	23.6	1.0
I	5,057	280	1,551	0.7	22.6	22.6	23.6	1.0
J	5,787	220	812	1.3	22.8	22.8	23.7	0.9
K	6,477	95	303	3.4	23.4	23.4	24.3	0.9
L	7,117	100	316	3.2	25.3	25.3	26.3	1.0
M	7,987	235	774	1.3	26.8	26.8	27.8	1.0
N	8,657	50	231	4.4	28.1	28.1	28.5	0.4
O	9,377	165	639	1.6	29.4	29.4	30.4	1.0

[1]Feet above confluence with Clear Brook (Williams Pond)

[2]Elevation computed without consideration of backwater effects from Clear Brook

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

HERRING RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Hopkins Prong								
A	550	410	1,348	0.2	6.2	0.2[2]	1.2	1.0
B	3,590	380	1,149	0.3	6.2	0.3[2]	1.3	1.0
C	5,200	520	1,515	0.2	6.2	0.3[2]	1.2	0.9
D	6,538	56	50	5.8	6.2	1.1[2]	1.1	0.0
E	6,706	100	690	0.4	7.4	7.4	8.0	0.6
F	8,360	100	743	0.3	7.4	7.4	8.0	0.6
Unity Branch								
G	11,312	50	152	1.6	7.4	7.4	8.0	0.6
H	11,455	45	379	0.7	11.4	11.4	12.3	0.9
I	14,060	8	55	4.5	11.4	11.4	12.2	0.8
J	17,397	144	1,091	2.1	21.2	21.2	22.2	1.0
K	18,412	186	1,106	2.1	21.9	21.9	22.9	1.0
L	19,452	163	863	2.1	22.7	22.7	23.7	1.0
M	20,497	100	504	3.6	23.7	23.7	24.6	0.9
N	21,670	337	1,531	1.2	25.2	25.2	26.1	0.9

[1]Feet above confluence with Herring Creek

[2]Elevation computed without consideration of backwater effects from Rehoboth Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

HOPKINS PRONG – UNITY BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Indian River								
A	26,878[1]	480[3]	3,292	1.0	8.3	8.3	8.3	0.0
B	28,400[1]	1,430[3]	9,195	0.4	8.3	8.3	8.3	0.0
C	29,700[1]	1,100[3]	8,034	0.4	8.3	8.3	8.3	0.0
D	31,520[1]	570	4,276	0.8	8.3	8.3	8.3	0.0
Ingram Branch								
A	540[2]	285	973	0.4	8.5	5.7[5]	6.7	1.0
B	1,960[2]	116	256	1.6	8.5	6.9[5]	7.9	1.0
C	2,389[2]	28	82	5.1	8.5	8.2[5]	8.8	0.6
D	2,482[2]	32	109	3.9	9.1	9.1	9.3	0.2
E	2,860[2]	67	212	2.0	9.5	9.5	9.9	0.4
F	2,950[2]	500[3]	1,614	0.3	18.4	18.4	18.9	0.5

[1]Feet above confluence with Warwick Gut

[2]Feet above confluence with Pemberton Branch (Wagamons Pond)

[3]Floodway width has been adjusted to conform to updated topographic data

[4]Elevation computed without consideration of backwater effects from Indian River Bay

[5]Elevation computed without consideration of backwater effects from Delaware Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

INDIAN RIVER – INGRAM BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Iron Branch								
A	3,890	80	278	3.4	8.3	8.3	9.1	0.8
B	4,015	100	792	1.2	14.1	14.1	14.1	0.0
C	4,230	80	697	1.3	14.1	14.1	14.1	0.0
D	4,960	30	286	3.3	14.1	14.1	14.2	0.1
E	5,190	65	380	2.5	14.1	14.1	14.6	0.5
F	5,350	65	528	1.8	15.9	15.9	16.1	0.2
G	6,020	20	135	7.3	16.3	16.3	16.6	0.3
H	6,225	40	282	3.3	17.9	17.9	18.3	0.4
I	6,570	28	240	3.9	18.2	18.2	18.9	0.7
J	7,440	98	807	1.2	18.3	18.3	19.3	1.0
K	8,320	100	708	1.3	18.4	18.4	19.3	0.9
L	8,546	100	673	1.4	18.4	18.4	19.4	1.0
M-AC*	*	*	*	*	*	*	*	*

[1]Feet above confluence with Whartons Branch

[2]Elevation computed without consideration of backwater effects from Indian River Bay

* Floodway data not computed

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

IRON BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Little Creek								
A-B*	*	*	*	*	*	*	*	*
C	1,360[1]	155	734	1.8	5.7	5.7	6.2	0.5
D	3,990[1]	120	454	2.9	7.2	7.2	8.2	1.0
E	5,520[1]	100	414	3.1	11.4	11.4	11.9	0.5
F	6,846[1]	42	200	6.5	14.5	14.5	15.5	1.0
Love Creek								
A	96[2]	650	3,640	0.2	6.2	5.3[3]	6.3	1.0
B	2,000[2]	550	3,069	0.2	6.2	5.3[3]	6.3	1.0
C	4,380[2]	450	2,906	0.2	6.2	5.3[3]	6.3	1.0
D	8,000[2]	300	2,070	0.2	6.2	5.3[3]	6.3	1.0
E	9,984[2]	200	656	0.6	6.2	5.3[3]	6.3	1.0
F	10,081[2]	152	717	0.6	6.2	5.4[3]	6.4	1.0
G	12,090[2]	150	711	0.4	6.2	5.4[3]	6.4	1.0
H	14,890[2]	100	252	1.1	7.1	7.1	7.5	0.4

[1]Feet above confluence with Broad Creek

[2]Feet above State Route 24

[3]Elevation computed without consideration of backwater effects from Rehoboth Bay

[*]Floodway data superseded by updated coastal analysis

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE CREEK – LOVE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Martin Branch								
A	131[1]	61	123	1.9	8.5	7.7[3]	7.7	0.0
B	1,450[1]	996	6,084	0.0	8.5	7.8[3]	7.8	0.0
C	3,870[1]	692	4,011	0.1	8.5	7.8[3]	7.8	0.0
D	6,550[1]	285	1,455	0.2	8.5	7.8[3]	7.8	0.0
E	8,390[1]	34	144	0.9	8.5	7.8[3]	7.8	0.0
F	8,515[1]	29	170	0.8	9.1	9.1	9.2	0.1
G	9,800[1]	27	105	1.2	9.1	9.1	9.3	0.2
H	12,510[1]	25	94	1.4	9.5	9.5	10.5	1.0
I	14,390[1]	51	77	1.7	11.9	11.9	12.0	0.1
J	14,550[1]	55	242	0.5	15.4	15.4	16.4	1.0
Mirey Branch								
A	520[2]	84	385	0.3	9.1	9.1	10.1	1.0
B	2,360[2]	100	396	0.3	9.1	9.1	10.1	1.0
C	4,369[2]	18	52	2.2	11.8	11.8	12.8	1.0
D	4,660[2]	25	24	0.9	15.3	15.3	15.3	0.0
E	4,803[2]	10	64	1.8	16.8	16.8	16.8	0.0
F	5,772[2]	13	55	2.1	16.9	16.9	17.5	0.6
G	5,990[2]	49	270	0.4	18.7	18.7	18.8	0.1
H	8,310[2]	10	50	2.3	18.8	18.8	19.0	0.2

[1]Feet above State Route 1

[2]Feet above confluence with Indian River (Millsboro Pond)

[3]Elevation computed without consideration of backwater effects from Delaware Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

MARTIN BRANCH – MIREY BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Mispillion River								
A	7,900[1]	181	846	2.6	8.5	6.1	6.8	0.7
B	8,097[1]	150	968	2.3	9.4	10.2	10.2	0.0
C	9,321[1]	60	639	3.5	10.3	11.1	11.2	0.1
D	10,245[1]	140	900	2.5	10.9	11.7	11.8	0.1
E	10,345[1]	279	1,505	1.5	12.1	12.9	13.4	0.5
F	12,069[1]	663	4,876	0.3	12.3	13.1	13.7	0.6
G	13,858[1]	93	568	2.7	12.5	13.3	14.0	0.7
Mullet Run								
A	550[2]	55	186	1.8	10.2	10.3[3]	10.3	0.0
B	732[2]	12	94	3.4	10.2	10.4[3]	10.3	0.0
C	782[2]	29	119	2.8	10.2	10.5[3]	10.5	0.0
D	2,282[2]	8	3	11.0	13.6	14.4	15.4	1.0
E	3,782[2]	106	274	1.2	17.8	18.6	19.6	1.0
F	4,006[2]	8	63	5.2	23.2	24.0	24.0	0.0
G	4,056[2]	188	1,168	0.3	23.8	24.6	24.6	0.0
Nanticoke River								
A-N*	*	*	*	*	*	*	*	*

[1]Feet above State Route 1

[2]Feet above confluence with Mispillion River

[3]Elevation computed without consideration of backwater effects from Mispillion River

*Floodway data superseded by updated coastal analysis

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

MISPILLION RIVER – MULLET RUN – NANTICOKE RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pemberton Branch								
A	0[1]	170	1,556	0.5	8.5	7.0[4]	8.0	1.0
B	142[1]	640[3]	4,212	0.2	8.5	7.8[4]	8.2	0.4
C	1,480[1]	400[3]	2,733	0.1	8.5	7.8[4]	8.2	0.4
D	2,149[1]	311	1,250	0.2	8.5	7.8[4]	8.2	0.4
E	2,249[1]	460[3]	2,350	0.1	9.7	9.7	9.9	0.2
F	4,280[1]	179	847	0.3	9.7	9.7	9.9	0.2
G	5,150[1]	61	199	1.2	9.7	9.7	9.9	0.2
H	7,175[1]	20	73	3.2	10.0	10.0	10.5	0.5
I	7,288[1]	15	52	4.5	10.0	10.0	10.5	0.5
Pepper Creek								
A	1,873[2]	39	281	4.8	11.7	11.7	12.2	0.5
B	2,017[2]	45	266	5.1	13.5	13.5	13.5	0.0
C	2,780[2]	13	134	10.2	14.5	14.5	15.4	0.9

[1]Feet above confluence with Broadkill River

[2]Feet above limit of riverine analysis (Limit of Riverine Analysis approximately 425 downstream of Confluence of Pepper Creek Fork 2)

[3]Floodway width has been adjusted to conform to updated topographic data

[4]Elevation computed without consideration of backwater effects from Delaware Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE
AND INCORPORATED AREAS

FLOODWAY DATA

PEMBERTON BRANCH – PEPPER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Pepper Creek Fork 1								
A	1,618	36	48	3.5	16.8	16.8	16.8	0.0
B	1,784	35	161	1.1	21.4	21.4	21.4	0.0
C	3,164	20	46	3.7	21.9	21.9	21.9	0.0
D	3,292	31	152	1.1	25.2	25.2	25.7	0.5
E	3,513	34	146	1.2	25.2	25.2	25.7	0.5
F	3,657	29	150	1.1	26.1	26.1	26.7	0.6
G	4,077	34	121	1.4	26.2	26.2	26.8	0.6
H	4,188	34	136	1.2	26.3	26.3	27.1	0.8
I	4,777	9	50	3.4	26.4	26.4	27.2	0.8
J	4,872	22	113	1.5	26.6	26.6	27.5	0.9
K	7,020	30	98	1.7	27.4	27.4	28.4	1.0
Pepper Creek Fork 2								
A	930	7	25	4.0	18.0	18.0	19.0	1.0
B	1,798	6	16	6.3	23.1	23.1	23.1	0.0
C	2,041	20	76	1.3	26.3	26.3	27.3	1.0
D	2,400	15	53	1.9	26.3	26.3	27.3	1.0
E	2,507	22	68	1.5	26.4	26.4	27.3	0.9
F	3,102	23	61	1.6	27.3	27.3	28.0	0.7
G	3,315	21	71	1.4	28.0	28.0	28.9	0.9
H	5,440	15	55	1.8	30.3	30.3	30.8	0.5

[1]Feet above confluence with Pepper Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

PEPPER CREEK FORK 1 – PEPPER CREEK FORK 2

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Pepper Creek Fork 3								
A	340[1]	7	27	9.4	14.5	11.9[3]	12.2	0.3
B	480[1]	11	50	5.0	14.5	13.8[3]	14.4	0.6
C	580[1]	11	107	2.3	19.2	19.2	19.4	0.2
D	680[1]	11	163	1.5	26.1	26.1	27.0	0.9
E	1,227[1]	60	527	0.5	26.1	26.1	27.1	1.0
F	1,321[1]	60	324	0.8	26.1	26.1	27.1	1.0
G	2,480[1]	30	147	1.7	26.2	26.2	27.2	1.0
Presbyterian Branch								
A	240[2]	30	87	2.4	12.2	10.3[4]	11.3	1.0
B	381[2]	30	156	1.3	13.9	13.9	14.7	0.8
C	695[2]	49	257	0.8	13.9	13.9	14.7	0.8
D	1,165[2]	40	139	1.5	16.6	16.6	17.1	0.5
E	1,315[2]	35	156	1.3	17.7	17.7	18.3	0.6
F	1,882[2]	30	100	2.1	17.8	17.8	18.5	0.7
G	2,119[2]	27	105	2.0	20.4	20.4	20.7	0.3
H	3,350[2]	40	150	1.4	20.4	20.4	21.4	1.0

[1]Feet above confluence with Pepper Creek

[2]Feet above confluence with Mispillion River (Silver Lake)

[3]Elevation computed without consideration of backwater effects from Pepper Creek

[4]Elevation computed without consideration of backwater effects from Mispillion River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

PEPPER CREEK FORK 3 – PRESBYTERIAN BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Rossakatum Branch								
A-E*	*	*	*	*	*	*	*	*
F	1,629[1]	7	35	8.1	6.1	6.1	6.6	0.5
G	2,683[1]	38	98	2.9	11.2	11.2	11.3	0.1
H	2,820[1]	21	102	2.8	13.4	13.4	13.4	0.0
I	3,820[1]	40	120	2.4	13.6	13.6	14.1	0.5
J	4,481[1]	57	116	2.5	14.3	14.3	14.6	0.3
K	4,624[1]	45	146	1.9	16.3	16.3	16.3	0.0
L	5,980[1]	21	82	3.5	17.6	17.6	18.3	0.7
M	8,330[1]	20	68	4.2	22.3	22.3	23.2	0.9
Round Pole Branch								
A	592[2]	200	1,258	0.5	8.5	5.3[3]	6.3	1.0
B	716[2]	150	941	0.7	8.5	5.8[3]	6.6	0.8
C	1,804[2]	100	449	1.4	8.5	5.9[3]	6.8	0.9
D	1,930[2]	100	574	1.1	8.5	8.2[3]	8.7	0.5
E	2,480[2]	100	555	1.2	8.5	8.3[3]	9.0	0.7
F	3,370[2]	59	150	4.3	9.5	9.5	9.9	0.4
G	3,510[2]	40	594	1.1	19.3	19.3	19.7	0.4
H	4,150[2]	40	584	1.1	19.3	19.3	19.8	0.5

[1]Feet above confluence with Broad Creek

[2]Feet above confluence with Broadkill River

[3]Elevation computed without consideration of backwater effects from Delaware Bay

*Floodway data superseded by updated coastal analysis

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

ROSSAKATUM BRANCH – ROUND POLE BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Sowbridge Branch								
A	7,325	30[2]	69	2.2	8.8	8.8	9.6	0.8
B	9,030	120	253	0.6	10.3	10.3	11.0	0.7
C	10,820	110	192	0.8	11.4	11.4	12.4	1.0
D	12,639	44	70	2.2	14.3	14.3	14.6	0.3
E	12,738	500	3,426	0.0	23.8	23.8	24.7	0.9
F	14,370	580	4,754	0.0	23.8	23.8	24.7	0.9
G	16,190	30	144	0.8	23.8	23.8	24.7	0.9
H	18,470	65	291	0.4	23.8	23.8	24.8	1.0
I	20,900	40	83	1.3	24.4	24.4	25.3	0.9
J	22,950	25	64	1.7	27.8	27.8	28.4	0.6
K	24,430	30[2]	31	3.6	31.9	31.9	32.8	0.9
L	24,664	250[2]	1,230	0.1	34.3	34.3	35.1	0.8
M	26,400	60	160	0.1	34.9	34.9	35.8	0.9
N	28,410	50[2]	15	1.3	37.4	37.4	37.6	0.2
O	29,876	30[2]	8	2.6	41.9	41.9	42.0	0.1
P	29,972	30	119	0.2	44.8	44.8	45.8	1.0
Q	30,990	50[2]	15	1.4	45.3	45.3	46.1	0.8

[1]Feet above Waples Pond Dam

[2]Floodway width has been adjusted to conform to updated topographic data

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

SOWBRIDGE BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Tantrough Branch								
A	202	214	1,348	1.2	14.7	14.7	14.7	0.0
B	3,263	690	1,986	0.8	14.9	14.9	14.9	0.0
C	5,960	200	238	3.2	15.4	15.4	15.5	0.1
D	6,580	60	211	3.6	17.6	17.6	18.0	0.4
E	6,719	174	1,872	0.4	24.0	24.0	24.0	0.0
F	9,030	345	2,121	0.4	24.0	24.0	24.0	0.0
G	11,140	100	405	1.9	24.0	24.0	24.0	0.0
H	13,470	60	183	4.1	26.0	26.0	26.7	0.7
I	13,568	450	3,853	0.2	33.8	33.8	34.7	0.9
J	16,760	74	336	0.7	33.8	33.8	34.7	0.9

[1]Feet above Northbound U.S. Route 113

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

TANTROUGH BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
Vines Creek								
A	0[1]	100	349	5.9	15.6	15.6	16.6	1.0
B	2,100[1]	100	405	5.1	19.1	19.1	20.0	0.9
C	3,900[1]	120	393	5.3	23.2	23.2	23.2	0.0
D	4,045[1]	170	907	2.3	24.4	24.4	25.1	0.7
E	5,080[1]	260	1,183	1.8	24.9	24.9	25.8	0.9
F	5,918[1]	100	298	6.9	25.2	25.2	25.5	0.3
G	6,061[1]	140	968	2.1	29.6	29.6	30.6	1.0
H	7,465[1]	100	829	2.5	29.7	29.7	30.7	1.0
I	8,465[1]	50	456	4.5	30.0	30.0	31.0	1.0
Whartons Branch								
A	3,720[2]	69	465	1.4	8.6	8.6	8.7	0.1
B	4,820[2]	94	495	1.4	8.7	8.7	9.2	0.5
C	6,900[2]	24	104	6.5	10.9	10.9	11.2	0.3
D	8,086[2]	27	131	5.1	15.6	15.6	16.3	0.7
E	8,216[2]	19	111	6.0	16.4	16.4	16.9	0.5

[1]Feet above limit of detailed study (located approximately 0.8 mile downstream of County Road 92)

[2]Feet above confluence with Indian River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

VINES CREEK – WHARTONS BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
White Creek								
A	712[1]	10	18	3.4	6.7	3.9[3]	4.0	0.1
B	782[1]	20	46	1.3	6.7	5.0[3]	5.0	0.0
C	1,336[1]	19	29	2.1	6.7	5.2[3]	5.2	0.0
D	1,440[1]	17	72	0.8	7.9	7.9	7.9	0.0
E	2,915[1]	13	34	1.8	8.1	8.1	8.2	0.1
F	4,290[1]	13	21	2.9	10.1	10.1	10.1	0.0
G	4,380[1]	16	54	1.1	11.4	11.4	12.3	0.9
H	4,455[1]	16	55	1.1	11.5	11.5	12.4	0.9
White Creek Ditch								
A	3,421[2]	10	27	1.9	6.7	0.8[3]	1.8	1.0
B	4,686[2]	10	25	2.0	6.7	2.4[3]	2.8	0.4
C	4,785[2]	26	66	0.8	6.7	4.5[3]	4.5	0.0
D	6,580[2]	7	23	2.1	6.7	5.0[3]	5.1	0.1

[1]Feet above Limit of Riverine Analysis (Limit of Riverine Analysis approximately 750 feet downstream of State Route 26)

[2]Feet above confluence with White Creek

[3]Elevation computed without consideration of backwater effects from Indian River Bay

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE

AND INCORPORATED AREAS

FLOODWAY DATA

WHITE CREEK – WHITE CREEK DITCH

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS report by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS report by detailed methods. Whole foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to areas of 1-percent annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to areas of 1-percent annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Zone AR is the flood insurance risk zone that corresponds to an area of special flood hazard formerly protected from the base flood event by a flood-control system that was subsequently decertified. Zone AR indicates that the former flood-control system is being restored to provide protection from the 1-percent annual chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 1-percent annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent annual chance floodplain, areas within the 0.2-percent annual chance floodplain, areas of 1-percent annual chance flooding where average depths are less than 1-foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile (sq. mi.), and areas protected from the base flood by levees. No BFEs or depths are shown within this zone.

Zone X (Future Base Flood)

Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent annual chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent annual chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent annual chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The countywide FIRM presents flooding information for the entire geographic area of Sussex County. Historical data relating to the pre-countywide maps prepared for each community are presented in Table 11, “Community Map History.”

Please note that FEMA has not included any new flood hazard data within the Town of South Bethany. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Bethany Beach, Town of	April 6, 1973	None	April 6, 1973	July 1, 1974 May 16, 1975 February 13, 1976 March 25, 1977 March 10, 1978 February 2, 1983 January 6, 2005 March 16, 2015
Bethel, Town of	January 17, 1975	None	January 16, 1981	January 6, 2005 March 16, 2015
Blades, Town of	June 7, 1974	January 16, 1976	January 16, 1981	January 6, 2005 March 16, 2015
Bridgeville, Town of	June 7, 1974	December 12, 1975	January 7, 1977	January 6, 2005 March 16, 2015
Dagsboro, Town of	June 28, 1974	December 19, 1975	June 1, 1981	January 6, 2005 March 16, 2015
Delmar, Town of [1, 2]	N/A	N/A	N/A	N/A

[1] This community did not have a FIRM prior to the first countywide mapping for Sussex County
[2] No Special Flood Hazard Areas Identified

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Dewey Beach, Town of	December 13, 1974	None	October 6, 1976	April 4, 1983 January 6, 2005 March 16, 2015
Ellendale, Town of [1, 2]	N/A	N/A	N/A	N/A
Fenwick Island, Town of	March 23, 1973	None	March 23, 1973	July 1, 1974 September 26, 1975 February 2, 1983 April 17, 1985 January 6, 2005 March 16, 2015
Frankford, Town of	June 7, 1974	September 13, 1974 December 12, 1975	September 16, 1981	January 6, 2005 March 16, 2015
Georgetown, Town of[1]	N/A	N/A	N/A	N/A
Greenwood, Town of	May 24, 1974	January 16, 1976	February 24, 1978	January 6, 2005 March 16, 2015
Henlopen Acres, Town of	September 6, 1974	January 2, 1976	August 15, 1978	February 2, 1983 January 6, 2005 March 16, 2015

[1] This community did not have a FIRM prior to the first countywide mapping for Sussex County

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Laurel, Town of	June 7, 1974	June 24, 1977	January 16, 1981	January 6, 2005 March 16, 2015
Lewes, City of	June 7, 1974	December 12, 1975	March 15, 1977	November 7, 1980 September 2, 1982 August 3, 1992 January 6, 2005 March 16, 2015
Milford, City of	May 24, 1974	December 26, 1975	June 1, 1977	July 14, 1978 January 6, 2005 March 16, 2015
Millsboro, Town of	June 21, 1974	December 19, 1975	September 1, 1978	January 6, 2005 March 16, 2015
Millville, Town of	October 18, 1974	December 12, 1975	September 25, 1981	January 6, 2005 March 16, 2015
Milton, Town of	September 13, 1974	December 12, 1975	August 1, 1978	January 6, 2005 March 16, 2015
Ocean View, Town of	August 2, 1974	December 12, 1975	September 3, 1980	January 6, 2005 March 16, 2015

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Rehoboth Beach, City of	March 30, 1973	None	March 30, 1973	July 1, 1974 March 12, 1976 February 2, 1983 August 3, 1992 January 6, 2005 March 16, 2015
Seaford, City of	June 21, 1974	December 19, 1975	February 1, 1979	January 6, 2005 March 16, 2015
Selbyville, Town of	July 16, 1991	None	July 16, 1991	January 6, 2005 March 16, 2015
Slaughter Beach, Town of	November 15, 1974	None	July 2, 1980	September 2, 1982 October 1, 1983 April 2, 1992 January 6, 2005 March 16, 2015

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
South Bethany, Town of	May 31, 1974	December 16, 1975	October 6, 1976	February 2, 1983 April 3, 1985 January 6, 2005 March 16, 2015
Sussex County (Unincorporated Areas)	December 13, 1974	None	October 6, 1976	October 1, 1983 January 5, 1984 February 19, 1986 April 2, 1992 January 6, 2005 March 16, 2015

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

SUSSEX COUNTY, DE
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Sussex County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, and FIRMs for all of the incorporated and unincorporated jurisdictions within Sussex County, and should be considered authoritative for the purposes of the NFIP.

This is a multi-volume FIS. Each volume may be revised separately, in which case it supersedes the previously printed volume. Users should refer to the Table of Contents in Volume 1 for the current effective date of each volume; volumes bearing these dates contain the most up-to-date flood hazard data.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, One Independence Mall, Sixth Floor, 615 Chestnut Street, Philadelphia, Pennsylvania 19106-4404.

9.0 BIBLIOGRAPHY AND REFERENCES

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